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January 30, 1998 • #175

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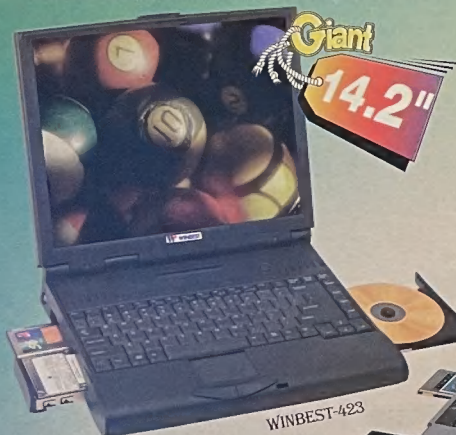
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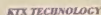
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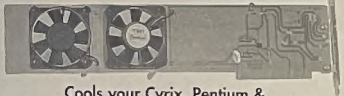
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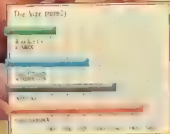


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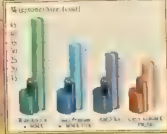
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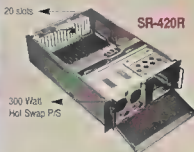
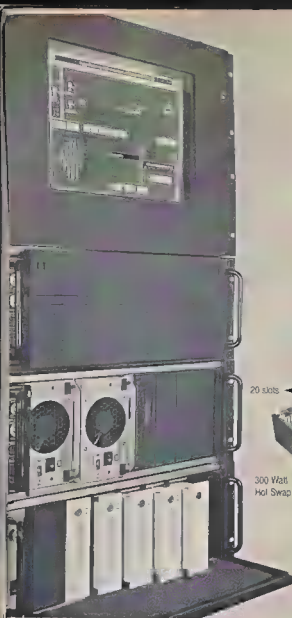


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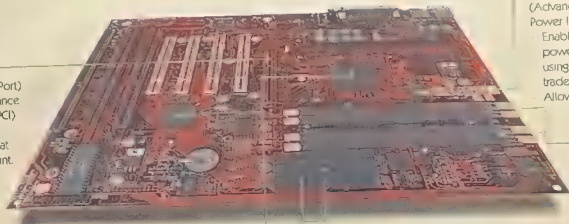


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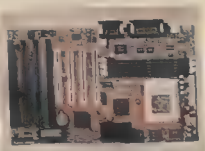
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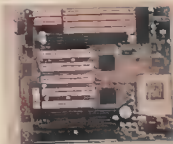
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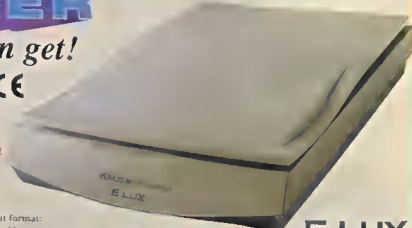
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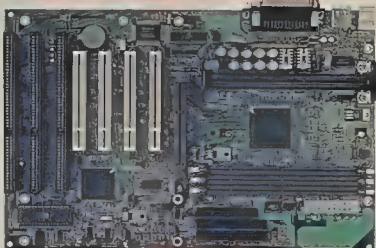
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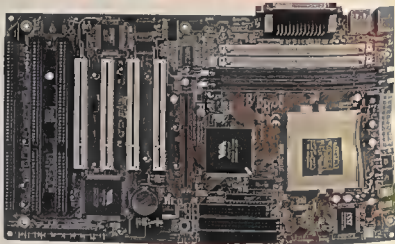
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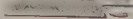
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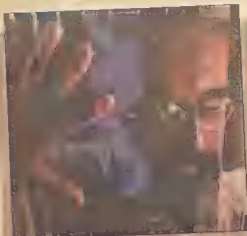
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Jim Warren (jwarren@well.com) organized the First Conference on Computers, Freedom & Privacy (1991), and led the 1993 citizen effort putting state legislation and statutes on the Internet. He served as the 1995 state Secretary of State's Electronic Filings Advisory Panel seeking online campaign finance disclosures and the Senate's Task Force on Electronic Access to Public Records until resigning in protest in June, 1997.

Warren is one of the named plaintiffs in the constitutional challenge against the Communications Decency Act, that was overturned in June, 1997, by the U.S. Supreme Court.

He founded InfoWorld, was founding host of PBS *Computer Chronicles*, founding editor of Dr. Dobbs's *Journal* and served half a decade on the Board of Directors of Autodesk, Inc.

He has received the Hugh M. Hefner First Amendment Award (1994), James Madison Freedom of Information Award from the Society of Professional Journalists—Northern California (1994), the Electronic Frontier Foundation Pioneer Award (1992, first year) and the John Dvorak Lifetime Achievement Award (1995).

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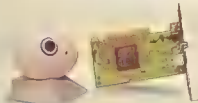
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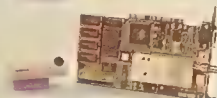


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BY PAUL HOFFMAN

Industry Insights

The Future Of Java—It's In the Hands of the Courts and Developers

Sun Microsystems,

the original developer of the Java programming language and operating environment, is fighting for control of Java, using everything from press hype ■ lawsuits. Its main perceived rival, Microsoft, is already taking a strong lead ■ determining how Java is used, and Sun is pulling out all stops in an attempt to stay in control. However, it has ■ long way to go in the battle because the real arbiters, the users, have yet to see almost any products.

To most computer users, "Java" is 1997's version of "multimedia" in 1990. It sounds attractive, it might even be achievable, but the promise ■ nowhere ■ near being met ■ the marketplace. Because Java is two things ■ programming language and ■ operating environment, it's easy for Sun ■ sell one while delivering the other. However, after two years of this, many users ■ asking "when will it be real?"

Worse yet for Sun, it's not just users who ■ asking this. Even developers who are programming in Java are finding that many of Sun's promises are not coming true. Most notably, Sun is saying that you can run Java programs on any computer platform, and that has been shown to be untrue. Not that programmers are abandoning Java ■ a language it still works quite well for that. But the reality of Java's limitations are becoming more ■ more apparent to everyone but Sun.

Java's Early Potential

When Sun introduced Java a little more than 26 MICROTIMES ■ JANUARY 30, 1996

two years ago, it started off as a programming language that could evolve into ■ operating environment that would work on any operating system.

It garnered a lot of interest in the programming community because it had most of the best features of the popular C++ language, and had a few significant improvements as well. Developers looked forward to a new language that would make complex, multi-programmer tasks go more smoothly.

However, Sun didn't invent Java to be just another programming language. Sun has always envied Microsoft's dominance of the PC desktop, and it looked to Java to be the tool that would help Sun win the desktop wars. Last year, Sun ratcheted up the publicity for Java, making it look like it would be the savior of corporations that have computers that run more than one operating system (that is, all of them).

To some extent, Sun was right. Java could take over the corporate desktop, but only if Sun did everything right, which of course is almost impossible for any company. Instead, Java progressed mostly as a very useful programming language, and ■ potential as a universal operating environment still isn't anywhere near being met. This caused problems for early Java adopters, who were relying on the cross-platform promise.

Developer Backlash

■ the past six months, developers have started being more vocal in their complaints about how Sun is positioning Java. Sun's favorite saying is

"write once, run everywhere," indicating that ■ single program will run similarly ■ many different operating systems. The current joke is that Java ■ "write once, debug everywhere," since each implementation of Java still seems quite different.

TO MOST COMPUTER USERS, "JAVA" IS 1997'S VERSION OF "MULTIMEDIA" IN 1990: IT SOUNDS ATTRACTIVE, IT MIGHT EVEN BE ACHIEVABLE, BUT THE PROMISE IS NOWHERE NEAR BEING MET IN THE MARKETPLACE.

Because many developers rely on Sun for early releases of new Java components, they are reluctant to criticize Sun in public. However, many online and print magazines have been running articles where many different Java companies are openly worried about Java not living up to its promise. And they're particularly upset at Sun for having the wrong priorities while Java is still clearly not ready for prime time.

Many of these same developers also have close ties with Microsoft because Microsoft owns most of the desktops of corporate America. Even more importantly, Microsoft has

Industry Insights *continued*

one of the best systems for developing Java programs. These developers have started asking Sun to tone down the anti-Microsoft rhetoric and focus on making the Java environment as good as they promised it would be.

Instead of backing down, Sun has done the opposite: it has sued Microsoft for breach of

contract in Microsoft's use of Java. Basically, Sun says that Microsoft agreed to distribute Java with all of Sun's extensions, including those that replicate things that are in Windows 95 and Windows NT; Microsoft says that the contract doesn't say that. After major wrangling, the two sides let everyone see the contract, and no

one's surprise, it is an impenetrable pile of legalese. Good luck to the judge who gets this case.

Just A Language

Sun's anger at Microsoft is based on Microsoft's assertion that Java is only useful as a language, not as an operating environment. They say that although Java can be made into an operating environment with a lot of work, it isn't there yet, and the indications are that even after that work is done, it's going to be slow and limited. Quietly, many Java supporters agree with Microsoft, some of them wishing otherwise.

Even Sun's biggest supporters agree that the current cross-platform environment is slow, probably too slow for commercial use. Like all software vendors, Sun insists that the next version (in this case, Java 1.2) will fix these problems and will run almost as fast as the native operating system. Almost no one believes this, mostly because Java is quite complex and will always add a fair amount of overhead. The fact that Sun said the current version would be fast enough doesn't give developers much confidence, either.

Note that Microsoft isn't "anti-Java;" in fact, Microsoft's Java development environment is considered to be one of the best (if not the best) available. However, Microsoft's toolkit is not meant to be cross-platform, but is instead for Windows only. Java programmers who only care about Windows report that Microsoft's Windows-only extensions are extremely useful, and Sun should consider making cross-platform equivalents of them as soon as possible.

Incomplete Compatibility

Sun's other complaint about Microsoft is that the Java Microsoft is shipping isn't compatible with the Java standard set by Sun. They rant about how this is destroying the ability of developers to create single programs that run the same everywhere. It makes for a compelling argument.

Microsoft responds that it's true that they are not fully compatible, and points out that none of the Java implementations out there are. Most notably, Netscape shipped a version of Java that had similar incompatibilities to Microsoft's, and yet Sun has not sued Netscape. Specifically, neither Microsoft's Internet Explorer or Netscape's Communicator

continued on page 20

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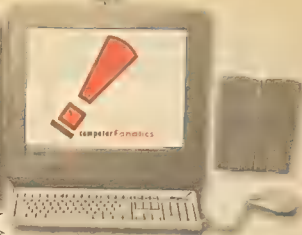


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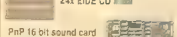
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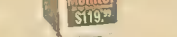
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Views and Views

Industry Insights continued page 21

come with the Java Native Interface (JNI), although Netscape is planning to release one soon, and neither supports the standard Java security package. Of course, Netscape doesn't sell operating systems that rule Sun (at least not yet).

Tests run by computer magazines such as *InfoWorld* show that the amount of compatibility between Java implementations varies, but that today's Java environments do not allow "write once, run everywhere" even when using programming code that is certified by Sun to work. This is the same as what many developers are saying quietly: the dream of cross-platform compatibility has yet to be realized.

Who Decide Java's Fate?

Sun clearly feels that it "owns" Java, and is trying to disentangle Microsoft from the Java world. In doing so, Sun is making many Java developers fearful of splitting the world into two Javas. On the other hand, Java developers who don't think that much about Windows are quite happy with Sun for taking on the anti-Microsoft fight.

The fight misses much of the point, however: It is the consumer who will determine whether or not Java becomes an important technology. If consumers are willing to sacrifice speed for cross-platform capabilities, the Java environment could certainly be a winner. However, consumers rarely are willing to use systems that are labeled "slow," particularly when there are faster systems that look the same.

In the case of Java, because Microsoft will always produce a Java language for Windows, and the plain language will always be faster than a Java environment that has to perform like an operating system. Sun will always have an uphill battle to convince people that the cross-platform features are all that useful. Given that the world has pretty much given up on desktop operating systems other than Windows, Sun's claim about importance of cross-platform utility is difficult to believe.

The consumer is always the arbitrator of what wins, but in the case of Java, the consumer is not usually a single end-user. Instead, the people who choose whether or not to use Java as an environment instead of just a programming language are corporate Information Services (IS) departments. They are the ones most concerned with cross-platform issues, and they are often much pickier than even software developers about issues such as programs looking exactly the same on different operating systems.

To date, most IS departments have taken a "well, maybe" attitude about Java. Those that have jumped on the Java bandwagon are doing so mostly for its use as a better development language than C++, and are hoping that it will also pay off for cross-platform development, but aren't betting too much on it. IS managers are usually conservative, and aren't willing to spend too much on gee-whiz technology that doesn't prove itself in the first few years, and Java has already missed that mark.

Thus, even if Sun and other Java developers are crazy for the new language-plus-operating-environment, it may not make it. Given Sun's positioning of Java's operating environment as an alternative to Microsoft, something that only a few customers find all that important, it is not clear if Java will be the big hit that Sun is betting on. Copyright © 1998 by Paul Hoffman. All rights reserved.

Stock Chart on page 107



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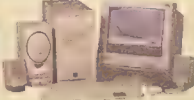
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Industry Insights continued from page 26

MICROTIMES STOCK INDEX CONTINUES TO HEAD SOUTH

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		11/29/97	11/29/97								
SOFTWARE											
NAS	Adobe	ADBE	40.63	38.82	-1.75	-4.31	15	0.20	0.35	53.13	12.50
NAS	Autodesk	ADSK	27.50	27.34	-0.13	-0.33		0.20	0.34	11.13	28.25
NAS	Borland	BORL	9.94	9.84	-0.10	-1.01		0.00	0.00	12.19	5.88
NAS	Broderbund	BRID	33.94	32.00	-1.94	-5.72		0.00	0.00	12.19	5.88
NAS	Infotrac	INF	5.54	5.31	-0.23	-4.15		0.00	0.00	12.19	5.88
NAS	Macromedia	MACA	3.78	3.62	-0.16	-4.23		0.00	0.00	24.28	4.07
NAS	Microsoft	MSFT	142.25	131.13	-11.12	-7.82	49	0.00	0.00	13.13	4.20
NAS	Novell	NOVL	1.15	1.18	0.03	2.61		0.00	0.00	13.13	4.20
NAS	Oracle	ORCL	32.44	31.54	-0.90	-2.78	29	0.00	0.16	43.13	17.75
NAS	Symantec	SYMC	25.13	23.44	-1.69	-6.72	22	0.00	0.00	23.75	12.60
HARDWARE											
NAS	Apple	APPL	14.75	19.75	5.00	33.90		0.00	0.00	29.56	12.71
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NYS	Digital Equipment	DEC	40.00	37.50	-2.50	-6.25	40	0.00	0.00	103.30	30.01
NYS	Dell	DELL	11.13	9.13	-2.00	-17.96	30	0.00	0.00	53.81	25.01
NYS	Gateway 2000	G2W	31.00	33.21	2.21	7.13	50	0.00	0.00	103.30	30.01
NYS	Hewlett-Packard	HWP	63.75	60.00	-3.75	-5.89	11	0.00	0.00	44.25	19.38
NYS	IBM	IBM	106.50	102.63	-3.87	-3.64	17	0.00	0.78	113.50	63.63
NYS	Silicon Graphics	SGI	14.00	11.44	-2.56	-18.30	46	0.00	0.00	30.31	10.98
NAS	Sun Microsystems	SUNW	37.30	42.31	5.01	13.43	22	0.00	0.00	53.31	25.83
NYS	Tandy	TAN	40.33	34.13	-6.20	-15.37		0.40	1.17	46.00	20.44
NYS	Xerox	XRX	71.54	70.83	-0.71	-0.99	18	1.30	1.43	81.00	54.13
CPUs											
NYS	Advanced Micro Devices	AMD	19.37	18.44	-0.93	-4.79		0.00	0.00	48.50	2.49
NYS	Cyrix Semiconductor	CY	9.83	9.06	-0.77	-7.83	43	0.00	0.00	18.84	7.34
NAS	Intel	INTL	34.68	35.44	0.76	2.19	19	0.10	0.17	102.00	42.83
NYS	LSI Logic	LSI	21.19	21.43	0.24	1.13	40	0.00	0.00	46.00	11.43
NYS	Motorola	MOT	29.83	30.94	1.11	3.72	32	0.30	0.48	95.30	19.75
COMMUNICATIONS											
NAS	3Com	COMS	35.75	32.69	-3.06	-8.57	37	0.00	0.00	78.25	24.01
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NYS	BellSouth Corp.	BLS	38.00	36.25	-1.75	-4.61	19	0.00	0.00	102.00	42.83
NAS	Cisco	CSCO	56.92	59.70	2.78	4.89	18	0.40	0.40	53.24	29.22
NAS	Lucent	LUC	44.64	43.61	-1.03	-2.31	49	0.00	0.00	60.43	30.19
NYS	Northern Telecom	NT	47.15	48.00	0.85	1.80	44	0.10	0.21	45.00	27.31
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NAS	Earth Link	ELNK	22.50		6.00	26.67		0.00	0.00	28.50	8.43
NAS	Netcom	NETC	30.35	29.54	-0.81	-2.67		0.00	0.00	25.00	7.88
NAS	Netscape	NETS	27.40	27.81	0.41	1.51		0.00	0.00	49.50	17.00
NAS	Yahoo	YHOO	58.88	67.03	8.15	13.86		0.00	0.00	71.00	13.19
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NYS	Disney	DIS	32.81	35.30	2.49	7.59	34	0.50	0.52	100.75	67.88
NAS	TCI	TCI	29.13	29.13	2.00	7.37		0.00	0.00	29.13	10.75
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NOTE: NYSE = NEW YORK, ASE = AMERICAN, NAS = NASDAQ
 (H) = NEW HIGH REACHED IN PERIOD, (L) = NEW LOW REACHED IN PERIOD

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ADP/AMERIS	25	LARGEST DOLLAR GAIN	Yahoo
UNICHANGE	23	LARGEST DOLLAR LOSS	Broderbund
NEW HIGHS	4	ANNUAL PERCENTAGE GAIN	AT&T
NEW LOWS	5	LARGEST PERCENTAGE LOSS	Novell

INDEX	CLOSING	CHANGE	PERCENTAGE
NYSE STOCK INDEX	5,287.12	12.12	0.23
DOW JONES INDUSTRIAL AVERAGE	7,919.12	12.12	0.15
STANDARD & POOR'S 500 INDEX	1,014.12	12.12	0.12
NASDAQ COMPOSITE	1,014.12	12.12	0.12

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In our Index, decliners outpaced advancers by a 13 to 11 margin. However, eight companies reached annual highs, five that fell, in a 52-week low.

Turning To Stocks In The Accompanying Table

Yahoo's stock rocketed \$8.13 per share last month after the company reported significantly higher fourth-quarter net revenues. Shares of Yahoo closed at a price of \$67.00 per share up 13.80%. The company reported net revenues totaling \$151 million for the fourth quarter ended December 31, 1997 compared to net revenues of \$8.9 million for the fourth-quarter of 1996, an increase of 181%. Pro forma income was \$2.5 million or \$0.05 per share, compared with a net loss of \$666,000 or \$0.02 per share for the fourth quarter of 1996. "Yahoo! continues to be a leader in traffic and advertising revenue," said Tim Koogle, president and CEO of Yahoo! "During 1997 we aggressively expanded our core navigational guide platform and emerged as the leader in a wide array of content and services. Our aggressive expansion of Yahoo!'s global-brand network of properties helped us drive both our traffic and our revenues to record levels."

Shares of Apple Computer headed north after the company announced rising net profits. Apple's stock increased \$5.00 per share, or 33.90%, to close the period at a price of \$19.75. Apple reported that for the fiscal 1998 first quarter ended December 26, the company generated revenues of \$1.6 billion and unit sales of 635,000. The company recorded a quarterly net profit of \$47 million, resulting in basic and diluted earnings per share of \$3.7 and \$3.3, respectively. Apple recorded a net loss of \$161 million, or \$1.26 per share, in the September quarter, and recorded a net loss of \$120 million, or \$0.96 per share, in the year-ago quarter. The profitable results were buoyed by the successful introduction of the Company's Power Macintosh G3 computers on November 10. Over 133,000 units of the G3 systems shipped during the quarter, rendering the G3 the most successful in the company's history.

Netscape's stock headed south after the company stated that it is expected to lay off about 400 permanent and contract workers as part of a previously announced restructuring. Shares of Netscape fell -35.52%, or \$9.81 per share, to close the monthly trading period at \$17.81. Earlier this month Netscape predicted an undetermined number of job cuts as a result of its estimated fourth-quarter operating loss of \$14.18 million, or \$0.15-\$0.19 per share. The company attributed the situation to competitive price pressure from Microsoft.

—Ryan Rachenbach, Production Manager
 Nordby International, Inc.

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REALIZABLE FANTASIES • BY JIM WARREN

The Evil Of Software Monopolies, Uh, Patents—Part 3

The Last Installment of Warren's Remarks To The Patent Office Opposing Software Patents

My previous

two columns contained the first part of my formal testimony presented to the Patent and Trademark Office's hearings on "Software Related Inventions," held in San Jose, California, in March, 1994. Part 1 contained the "Principles" that I presented; Part 2 contained the "Pragmatics," and this concluding column contains the specific recommendations I made—all presented as the official position statement of Autodesk, Inc., which at the time, was the sixth-largest microcomputer software publisher in the world.

Specific Recommendations Opposing Software Patents

First and foremost, let us agree that those who hold software patents probably prefer patent protection, and those who spend their time and resources creating technical innovation and national progress—rather than creating patent applications and litigation—probably prefer unfettered freedom to innovate.

Let us also agree that the constitutional intent is to "promote progress."

So let us disregard who wants what for self-benefit, and act on principle.

We propose as a principle, that those processes that are exclusively intellectual and exclusively algorithmic—even when mimicked by machine—must not be monopolized.

These are Autodesk's implementing recommendations, and they are mine, stated as a multi-decade industry observer and entrepreneur. And they are supported by the vast majority of talented programmers I have known. (They are in less favor, however, with

many of the intellectual-property attorneys I know—who do not create technical innovations, but ■■■ well-paid to patent them, threaten them and defend them.)

Recommendations

We offer two recommendations, the second having twelve parts—so to speak, the 12 Apostles of Redress:

First: Issue a finding that software, ■■■ I have defined it, implements intellectual processes that have no physical incarnation; processes that are exclusively analytical, intellectual, logical and algorithmic in nature. Use this finding plus the clearly stated constitutional intent ("to promote progress"), to declare that the Patent Office acted in error when it granted software patents. Declare that software patents monopolize intellectual and algorithmic processes, and also fail to fulfill the constitutional mandate to promote progress—that in fact, they clearly threaten it.

Declare that only the representation of such algorithmic intellectual processes—in human-readable or machine-readable form—is protectable, and then only by controlling the right to copy it.

Declare that software, as a mimic of the mind, cannot be patented.

As with Prohibition's speakeasies and the nation's unsuspecting nuclear-test subjects, this will create the problem of how to make whole those who hold erroneously issued patents. But that cannot justify continuing to patent intellectual processes. Repaying patent-holders can and should be resolved through the political process—although patent-holders cannot expect to retain their improperly granted monopolies of logic.

Like the rest of us, the government must

accept the consequences of its errors and move to correct them.

Second: Until—and only until—software patents are definitively prohibited, reject or at least freeze all such applications that have not yet been granted, pending conclusive action on all of the following twelve recommendations.

1. Redress Serious Errors Of Previous Administrations: Issue ■ finding that there have been extensive and serious errors of judgment in a large percentage of software patents granted in the past, and immediately recall all

continued on page 34

Let it be the responsibility of those seeking lengthy monopolies to defend the truly novel and truly non-obvious character of their innovations in a public patent-application review process. Do not continue to foist that responsibility onto all other practitioners.

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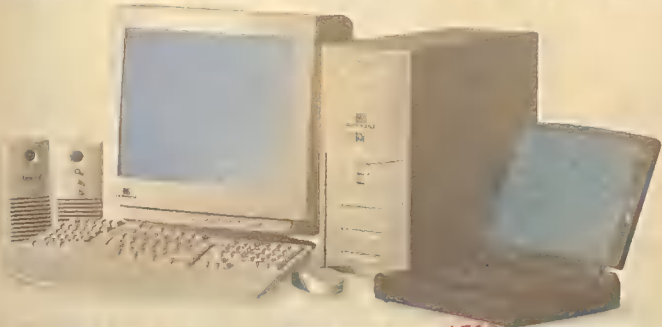
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Realizable Fantasies continued from page 35

software patents for re-review and possible revocation.

Encourage industry assistance by distributing summaries of all such patents to the top 20 or 50 or 100 software publishers and all other interested parties, requesting their examination and soliciting prior art and other challenges. This will probably require legislation to protect cooperating companies, lest they dare not participate for fear of later claims of "knowing infringement."

In addition, make the information available via the Internet and solicit maximum public input via that channel.

2. Mandate Disclosure Upon Filing: Issue a finding that it unconstitutionally suppresses progress to hide software threats in secret filings for 90 to five years, especially given that software products often have a development period measured in months and a life-span of one or a very few years. Note that most of the high-tech nations with which we compete require disclosure upon filing, or very soon thereafter.

Based on those findings, adopt a policy of disclosure upon filing, or at least within, say, ninety days of filing.

This will give software developers essential early warning of possible danger. It will also allow them to provide badly needed prior art before the Patent Office spends staff time on the application, and provide that prior art perhaps years before the patent might be granted and become a threat.

If a potential filer fears that such early disclosure will endanger trade-secret protection because the patent application may be rejected, so be it. Somehow, most of the rest of the world survives with disclosure-upon-filing.

Let it be the responsibility of those seeking lengthy monopolies to defend the truly novel and truly non-obvious character of their innovations in a public patent-application review process. Do not continue to foist that responsibility onto all other practitioners, who must prove after-the-fact invalidity in costly, intolerably delay-ridden court defenses that leave as our only options paying unjustified ransoms, years of halted progress, and waste expended on defensive patent applications.

3. Require Disclosure Of Complete Source Code And Documentation Upon Filing: Reiterate that the major function of the

patent system is to assure complete public disclosure of innovation in order that all may benefit and progress be promoted. Issue a finding that software patents require full disclosure of complete, original source code and complete internal documentation.

Then require its disclosure—preferably upon filing, or perhaps ninety days later, but at least upon the granting of a software patent. Note that this implements the "best mode" requirement.

Furthermore, find that software-patent disclosures in the past have often failed to fulfill this "minimum requirement, and require such disclosures for present software patents, to correct their improperly incomplete disclosures of the past. Patent-holders who decline to so disclose in a timely manner must have their patents invalidated by prompt Patent Office action.

4. Prohibit Filings After Any Public Exposure: Issue a finding that most of the nation's high-tech computers, in Europe and elsewhere, prohibit patent filings after any public exposure of an innovation. Further find that patentable innovation in software is unclear; vaporware is rampant; early disclosure is common; sharing of disclosed innovation is almost universal; and, possibly infringing development using such disclosures is almost inescapable. Use that finding to prohibit any filing after the date of any public exposure.

(*—"vaporware" refers to products and innovations that are announced many months and even multiple years before they are finally delivered.)

5. Reduce Requirements For Challenging Software Patents: Find that the evaluation of what constitutes new, novel and un-obvious innovation in software is highly subjective and essentially impossible for the Patent Office to judge, especially since the Office does not have available to it the fifty years of prior art that exists. Use that finding to change the standard for invalidating software patents, from a requirement for "clear and convincing" evidence, to a presumption of validity at all—which is usually the case if the experience of well-funded defendants such as Autodesk is any measure. At an absolute maximum, require no more than a "preponderance" of evidence.

6. Reduce Protection Period: Issue a finding that seventeen-year software patents are

clearly unreasonable in an industry where (1) significant innovation can often be created in months, (2) most innovation has minimal costs relative to traditional inventions, (3) manufacturing and distribution are trivial, (4) products can be shipped within weeks of being finalized, (5) great profits often be attained in less

If a potential filer fears that such early disclosure will endanger trade-secret protection because the patent application may be rejected, so be it. Somehow, most of the rest of the world survives with disclosure-upon-filing.

than a year; (6) the life of a product is typically only a few years; and (7) all of the growth of the industry—from inception in *Diamond v. Diehl* in 1981—was barely three times that seventeen-year monopoly period.

Therefore, shorten the one-time protection period for software patents from seventeen years to no more than, say, two years. *Sui generis* is justified.

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	Pentium MMX 233	\$835
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
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
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Letters

Microsoft Vs. DOJ—The Debate Goes On

Double Standard?

Why should Microsoft not have the right to define what should be included in their operating system? They are the ones who have to sell it and they are the ones who will suffer the losses if they cannot sell it.

Should Uncle Sam forbid WordPerfect from including a spreadsheet and a file manager in their "word processor"? Was WordPerfect using its "monopoly" to enter the spreadsheet market? Why didn't the DOJ investigate WordPerfect's "monopolistic practices?"

There is no question that the DOJ is singling out Microsoft for harassment. After all, Netscape has been giving away their browsers for years (I for one have been using version 1 through 4 without paying a single cent). Netscape is also, according to a recent *PC Week* report, trying to turn Communicator into a platform.

Not too long ago, Netscape had a "monopoly" of its own in the browser market. So why is it OK for Netscape to use its browser "monopoly" to enter the OS market but it is not OK for Microsoft to use its OS "monopoly" to enter the browser market?

Not too long ago, the DOJ was investigating MS for bundling the MSN, even though Apple had been bundling eWorld with impunity. Double standard? You bet!

Nameless email correspondent

Stop The Monopoly!

It should be obvious to even the most casual observer that the Microsoft monopoly in the world of personal computers should be ended. Microsoft's increasingly strong monopoly began in the 1980s with their version of the Disk Operating System (DOS) and progressed with the introduction of Windows 3.1 and then Windows 95.

First, Microsoft pushed out the then-dominant spreadsheet software, 1-2-3, produced by Lotus Corp., and replaced it with their own Excel. Then they pushed out the then-dominant

word-processing programs, WordPerfect, produced by WordPerfect Corp. and WordStar, produced by MicroPro International Corp. and replaced them both with their own MS Word software.

They did this by "bundling" their software applications, Excel and Word, in a package along with their Windows operating system, which they forced computer manufacturers to accept on an "all or nothing" basis. This activity was obviously a restraint of trade and free competition, but the Republican Reagan and Bush administrations were not interested in enforcing the existing anti-trust regulations. In the go-go 1980s, this lack of competition and lack of a level playing field for software developers was ignored and winked at.

Now Microsoft Corp. is trying to leverage its dominant Windows PC operating system into a domination of Web browsers and other functions on the Internet. It clearly violated its 1995 consent agreement with the US Department of Justice by forcing computer manufacturers to buy its Web browser when they purchase the Windows 95 operating system.

It is high time for the Department of Justice to say "No more monopoly tactics" to the arrogant Microsoft Corp. Here is a corporation that is so greedy that it is resisting tooth-and-nail paying any benefits to long-term contract employees. Every corporation in America has a state charter that requires it to serve the public interest. This corporation is no longer serving the public interest and is violating its state charter.

I believe that Microsoft Corp. should be broken up into smaller, competitive companies, just as the Standard Oil Trust was broken up back in 1911. There could be a Windows Corp., a Word Corp., an Excel Corp. and a Microsoft Internet Corp. It is no longer tolerable to let the monopolistic Microsoft Corp. keep extending its grasp into more and more areas of our computerized economy.

James K. Sayre

Complexities

Although the current Justice Department suit has brought to light some of Microsoft's more "arcane" dealings, especially in terms of sales practices, I think there is a larger point being missed by the press.

While Microsoft would have a difficult time asserting that, say, a word processor or a paint program is part of the operating system, I don't believe that it is over to the HTML browser.

To assert that any program is "part" of the operating system, you would have to offer proof that the operating system needs that to perform basic functions. Just because the command can be added, this does not de facto prove that the function or program is not part of the operating system.

For example, Symantec and others provide extension programs to, say, show the disk space remaining, in a graphical and interesting way. But this still remains a vital feature of the operating system, such that a user without that function might be compromised.

In the case of the HTML browser, a document type is being introduced to general use that requires a special program to view. It is debatable if a system is "compromised" by its inability to read such a file right out of the box. However, since HTML files are becoming more popular, it seems obvious that Microsoft would want to add that function at a basic level in the operating system.

The final nail in this argument, in my opinion, is the Windows "help" file format. The purpose of the help file format is practically identical to that of HTML. It gives presentation-level text and images that free-flow to adjust to different window sizes, menu options, etc.

The browser itself copied HTML from SGML, intended to be a general purpose formatting language. So HTML is moving to become the standard for interactive displayed text and images. And it makes every kind of sense that Microsoft might want to find sources of text and other presentation data in the operating system.

continued on page 254

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Business Solutions

LAPTOPS • BY ED KAHN

Keyboards And Their Cousins

Darwin Keyboard's NoteBoard

Keyboards have

consistently been the one major limitation with laptops. While I do not fault most of the laptop manufacturers, I still find that nothing can beat a good, full-size keyboard. Of course, when you are on the go there is no practical alternative to a laptop's built-in keyboard. But when you are working at your primary workspace, it is a real advantage to have a good keyboard. After all, the two main interfaces you have with your computer are the keyboard and the display.

Almost any PS/2 keyboard will do the job, with some brands available for less than \$20. And while we are criticizing laptops, I must also weigh in on the side of a mouse rather than either a touchpad or a trackpoint pointing device. I find that I can navigate much more rapidly with a conventional mouse or a variation of one than with the devices that are coming almost all of the laptops these days. So while you are considering a standalone keyboard, you may well add a mouse for your primary location. When on-the-go, we have to make compromises, but I can no longer say that I like either the built-in keyboards or pointing devices as well as what a standard fare for a desktop computer.

In my office, I do everything I can to get away from these limitations and restore the system to a reasonable facsimile of a traditional desktop computer. The addition of a decent keyboard, however, pushes the laptop farther away from my eyes and makes the display all the harder to



read. Darwin Keyboards recently addressed the whole business of an add-on keyboard for laptops with the introduction of their NoteBoard package—a full-size keyboard, a matching serial mouse and software that lets you customize the keyboard.

The basic NoteBoard is a decent keyboard. It is similar in layout to most good PS/2 keyboards. It stands out, however, in that it is designed specifically to accommodate the needs of laptop users. It has feet that are adjustable to six different heights so you can

raise the keyboard high enough to allow the body of the laptop to slide under the NoteBoard. In this way, you will neither have to use a lot of desk space for the add-on keyboard nor have the LCD display so far away from your eyes.

The concept is good. In practice, however, I was only partly pleased with the results. In my case, I am using a laptop that is unusually big and the legs on the NoteBoard simply were not tall enough to accommodate my machine. Darwin has thought of this and offers leg extensions upon request. The problem, however, is that the keyboard is then too high for me to type comfortably. My solution was to use the NoteBoard in front of my laptop, which partially defeats the purpose of its carefully thought-out design. If you have a reasonably sized laptop, I would expect this keyboard to work perfectly. I am pleased with both the layout as well as the touch and feel of the keyboard. Bear in mind, however, that there is hardly any part of the computer as personal as the keyboard. What feels great to one user may not to another. I suspect that some users may find this keyboard equal to the best they have ever used, while others may find it only average. In any case, it is good enough for the vast majority of users.

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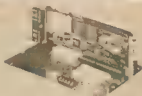


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Business Solutions

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A mouse is a pretty standard piece of equipment and will work with virtually any laptop. After struggling with a touchpad for too long, I was delighted to switch back to the mouse. My preference, of late, however, has been the Microsoft IntelliMouse (\$84.95). This mouse, which has been out for some time, works especially well with Microsoft software. It has a wheel that lets you easily scroll back and forth through documents, spreadsheets and directories. In addition, you can zoom in and out with the wheel and a final feature that I love is its teleprompter mode, which lets you automatically scroll through a document at any speed you like. It's great for proofreading.

The advantage of the mouse Darwin includes with the NoteBoard is that it connects through the serial port rather than a PS/2 port. Many laptops have only one PS/2 port, which means you may have to choose between an add-on keyboard and a mouse. Darwin's package is a good solution.

The final component of the NoteBoard package is the LaunchBoard software, which lets you customize the keyboard. You can, for instance, set it up so your function keys take you directly to the Web sites you like or open programs or documents that you use frequently. In addition, there is a feature to the software for creating sophisticated software applications that will open and close programs and perform functions you repeat.

Other manufacturers are also recognizing the limitations of laptop keyboards. Fujitsu Takamisawa America has just come out with a numeric keypad specifically designed for laptops. The keypad plugs into a PS/2 port and also has a pass-through PS/2 port that lets you can connect a mouse to the keypad. This device is targeted primarily to on-the-go users. In your primary location, you may well use a good keyboard like the NoteBoard that has a full numeric keypad. On the road, however, this keypad will be a great convenience for number

crunchers. If you are working with spreadsheets or other number-intensive applications, this sure beats imbedded numeric keypads or the row of numbers across the top of the keyboard.

While laptops are terrific, the addition of some market products can improve the performance of these little wonders on-the-road and at home.

continued on page 5

RESOURCES:

NoteBoard with NoteMouse, \$119.95

Darwin Keyboards
915 Bryant St.
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Computer Of The Month

Micro Express' Multimedia NP8200MMX

Micro Express

computers have consistently delighted me over the years. Its newest laptop—the NP8200MMX—is an impressive computer at any price, but for under \$3,000 it is amazing. This is a hefty laptop, weighing 8.4 lbs. and measuring 9.1" x 11.9" x 2.2." Laptop buyers have to carefully consider just what they want out of a system that they purchase. For myself, rarely working in airplanes, I value portability, but prefer the larger laptops like this ■ because of the extra ease-of-use offered.

The NP8200MMX offers a large, 13.3" active-matrix color display and a well-designed keyboard. But in addition, it is a powerhouse, sporting a Pentium 200MHz MMX CPU. It comes standard with 24MB of RAM, upgradable to either 32MB (extra \$60) or 64MB (extra \$199). It has a removable 2.1GB hard drive. In addition, it includes a 20X CD-ROM drive ■ well as the standard floppy drive.

This computer is marketed as a multimedia computer and it fills the bill admirably. While the large ■ excellent, I still prefer ■ external monitor when I am working in my office. For making presentations, you can easily ■ it to a television through the output ■ the back. Like many portables, this one requires you to choose between connecting a keyboard or a mouse if you are using the PS/2 port. In order ■ add both an external mouse and keyboard, you will need to use a

serial mouse. The built-in touchpad is good enough for when you are traveling, but no match for ■ comfortable mouse.



The NP8200MMX is an impressive computer at any price, but for under \$3,000 it is amazing.

While most good portables offer modularity, Micro Express takes the concept farther

than many of the others on the market. The NP8200MMX comes with a lithium-ion battery that should provide power for a couple of hours. Additionally, you can replace the floppy drive with ■ second battery, which also is included with the computer. Replacement batteries (\$199) are available. If you fill the floppy bay with a second battery, you can still access the floppy drive by connecting it to the parallel port with the provided cable. If you do most of your work using AC power, you might want to consider ■ internal AC adapter (\$149). This adapter replaces the primary lithium-ion battery and eliminates the need for the standard external power supply that comes with the laptop.

The CD-ROM can be swapped with either a magneto-optical drive (\$349) ■ a second hard drive (\$205-\$399). Magneto-optical drives are becoming an attractive option for backups. The CD-ROM drive is only part of the multimedia package. There is a built-in microphone and two speakers. In addition, there are line-in, microphone, headphone/speaker ports and a volume-control knob on the side of the machine. A MIDI/game port on the back of the unit will serve those who work with music files or are addicted to games. The sound system is Sound Blaster-compatible.

A pair of PC Card slots add to the multimedia capabilities as well as provide a convenient way of extending the interfaces of the computer. The lower PC Card slot supports Zoomed Video. This allows you

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Laptops continued from page 50

to obtain the best images from a CD-ROM, provided your system is set up properly. All of the necessary drivers are included with the system. When the two slots are used together, they will accommodate a Type III PC Card Micro Express includes a Type II 33.6Kbps fax/modem with this system. I prefer this approach to built-in modems, which will most likely soon be out-of-date and are expensive to change.

An infrared port offers another option for

moving files to either a printer or another computer. Finally, there is a USB port. While I see few peripherals that use this port, I have been told that this port will become increasingly important in the future as new computers are similarly equipped.

The documentation that comes with this laptop is wonderful. While you can read it and learn what you need to know even if you are inexperienced, there is also a wealth of technical information for those who need to know

these details as well. The manual is put together in such a way that either kind of reader will find it comfortable. If you need support beyond what is provided by the documentation, there is a 24-hour telephone number you can call. Micro Express provides a full four-year warranty on parts and labor. And finally, a carrying case rounds out the package. ■

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Finding Work As A Telecommuter

It's The Wrong Perspective

Trying to find work as a telecommuter is usually as frustrating and fruitless as expecting to be hired because you have a license and know how to drive to work. In most employment situations, you won't and probably can't find work simply as a pure telecommuter.

But you quite often can find a good, satisfying job and—once established in it—win permission to perform some of your duties on a telecommuter basis.

Once you successfully accept the truth of this situation and shift your attitude accordingly, looking for work you can do as a telecommuter becomes a lot more satisfying. No longer will you be forced to scour obscure Web sites and pore through long lists of computer-programming projects (unless, of course, you're a computer programmer). No longer must you endure "multi-level" or "network" marketing come-ons and pitches that offer you fabulous success for no-risk, no effort, and no money down.

Instead, you can simply recognize that—except for jobs like surgeon and plumber which today's technology makes impossible to do remotely—there are only two kinds of jobs in the world: those for which telecommuting is already accepted, and those for which telecommuting will be accepted. If you're not lucky enough to find one of the former, you'll need only make an effort to develop one of the latter.

How To Proceed

First, recognize that an employer organization that isn't getting the results it needs or wants from non-teleworking employees can't easily be induced to hire someone of extreme competence and experience, and then will have little choice but to assent to him or her working as a telecommuter some of the time.

Second, understand that telecommuting is not an entirely strange or undesirable concept to many large employers—as rumor would have it. This is particularly true when that company's management is comfortable shipping American jobs overseas. If a company willingly hires programmers in India or keypunchers in Ireland, why should management blanch at the notion of hiring a local employee who'll telecommute from 20 miles away one day a week?

Third, feel confident about the future, because the forces of history are on the side of the telecommuter. With every passing day, more and more evidence mounts in favor of telecommuting: competition and costs conspire to make telecommuting not only more attractive, but more necessary to almost every employer, and die-hard opponents of telecommuting—who tend to be among older generations—move up and out of front-line management, if not entirely out of the employer's organization.

The facts support this interpretation. As many as 10% of human resources managers at large companies say their organizations already employ telecommuters, or are expecting to employ some within a year. What's more, vast numbers of laid-off professionals and executives have reacted to being dumped from full-time careers by starting their own small companies and consultancies. Rather than burden

their new situations with heavy payrolls, many of these entrepreneurs are opting to build "virtual" organizations staffed by telecommuters and other flex-timers.

So one good way to start looking for work you can do as a telecommuter is to start looking for work you can do. Begin by taking a complete

self-inventory. What are your strengths? Weaknesses? Skills? Specialized knowledge? Interests? Experience?

Then try to puzzle out what kind of tasks, what kind of responsibilities, what kind of positions, they all add up to?

Once you have a likely industry or job description in mind, begin to research the potential employers. Who are the biggest players? The newest? The most innovative?

Contact each of them just as you would if you were looking for a non-telecommuting job. But in your second or

third interview, begin to inquire about the possibilities of telecommuting to the new job one or more days per week.

Take your time. Present your business case thoroughly, in detail. And be ready to answer questions from across the desk. In some situations, there will be little resistance to your idea. In others, you may decide to take a promising job without first obtaining an explicit commitment to telework, with the understanding that you'll have to prove yourself under difficult conditions before it becomes politically feasible to ask your new employer about telecommuting one or more days per week.

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Solutions

Telecommuting *continued from page 58*

Ergonomics Is Cost Effective

A recent study of ergonomics (the scientific study of work) among private employers conducted by the US General Accounting Office found the most successful injury-elimination programs contain the same basic approaches, and relatively "low-tech" ergonomic efforts at five intensively-studied companies reduce the number of injuries due to poor ergonomics by anything from 2.4% to as much as 6.1%, thereby reducing the cost of those injuries by 35% to 91%.

That's significant, because employers spend about \$60 billion per year on workers' compensation costs associated with employee injuries and illnesses. In 1995 alone, for example, there were 308,000 cases of illness due to repeated trauma—precisely the kind of injuries to which telecommuters are prone—a number representing more than 60% of all work-related illnesses recorded that year. In 1997, about 32% of all days lost from work resulted from repetitive motion or overexertion.

It's good to know that much of this lost time and injury-related expense is easily preventable through relatively simple changes in procedures, workstation arrangement, work practices, and so forth.

According to the study, aside from management's commitment to reduce problems caused by poor ergonomics, the core elements of effective programs include:

- 1) Employee involvement through committees or teams to do such critically important tasks as consider potential ergonomic problems areas, receive and analyze reports of work-related injuries, generate and solicit suggestions for remedial actions.
 - 2) Identifying problem jobs and tasks. It doesn't matter whether the organization performs detailed analyses of specific ergonomic situations, compiles injury reports with an eye open for jobs and tasks that generate the most injuries, or analyzes responses to specialized surveys from people in various job slots. This identification process works even better when it involves expert observations of people at work, physically measuring workstations, and so forth.
 - 3) Developing "controls" to eliminate or reduce the ergonomic dangers present in the specific situation. So-called "engineering" controls (like shortening the distance a worker must reach automatically to grab something) generally work much better than "administrative" controls, since they generally eliminate that ergonomic problem. In contrast, coaching a worker to stand and walk rather than reach, adding a worker to recognize ergonomic hazards, or adding rest breaks may be helpful, but may not be entirely effective.
- While ergonomic problems are by no means concentrated among telecommuters, as a group those of us working from home may be at slightly greater risk of ergonomic injury. The reason is simple: in setting up and furnishing a place to work in our own home we usually pay less attention to ergonomic considerations than do the professional office designers who work on the employer's central offices.
- The government study cites a specific job situation that might be typical of a telecommuter: 1) the employee talks on the telephone or works on a computer much of the day, 2) management strictly enforces the employee's production goals, and 3) there are only two or three scheduled breaks during the workday. Employees in this situation produced one of the highest rates of "muscular-skeletal disorders" of any group in the study.

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Telecommuting *continued*

The most effective remedies for this group included larger computer monitors to reduce eye strain, and the addition of several ergonomic accessories, including a wrist pad for ■■■ with the computer keyboard, head sets for use with the telephone, ergonomic chairs, and larger work surfaces.

While the remedies were simple and inexpensive, the results were very impressive. In addition to time and money savings, the study found efforts to improve workplace ergonomics frequently improved morale, productivity, and quality of output. Some managers also reported that turnover and absenteeism were lower after the ergonomic remedies were introduced.

It also appears that efforts to improve ergonomics cannot remain static. Once the initial phase is complete and the most egregious problems have been resolved or eliminated, integrating ergonomic programs with ongoing productivity improvement and quality-control

programs becomes another means of continually improving the organization's overall results.

A Tale One Telecommuter

I recently heard the story of a field service coordinator working for an international company in the interactive television industry. By using a fully equipped home office and specialized adaptive technology, he is able to perform all the duties of his full-time position from his own home, despite being visually impaired.

What's especially interesting about this story is that, because he is working at a distance from his employer's corporate headquarters, only one other member of the company has ever been aware of his disability.

Not only is he able to compete on a level playing field and efficiently complete all the tasks his boss hands him, but since his visual impairment hasn't become common knowledge, all the references and recommendations

he might receive when he leaves the company will be completely unbiased—based strictly on his job performance and personal abilities.

A dedicated team player, this telecommuter routinely makes full use of several telephone lines and an array of modern communications technology to stay in very close touch with people working at corporate headquarters.

Although his boss originally believed that on-site supervision would be necessary to obtain top performance and productivity, that's now all in the past. At least one telecommuter has proven you can turn in a great job from a distance—regardless of the strengths and weaknesses that might come into play if you were forced to travel to the central office.

Telecommuting May Influence Demographics

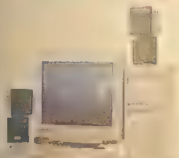
You may not have thought this through, but telecommuting is likely to make significant changes in the distribution of populations.

continued on page 16

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Business Solutions

Telecommuting *continued from page 62*

throughout cities, suburbs, and rural towns.

For most of this century, cities grew outward from the center — everyone sought newer, nicer places to live that were still within physical commuting distance of good jobs. Cities continued to reflected a broad mix of populations of all ages, socio-economic levels, and success.

But this pattern didn't last. Beginning in the '60s and '70s, the central — of cities began to seriously decay as the bedrock businesses that made up their tax bases left town, and families with the means to make a choice began to follow. The result — the "hollow-core" phenomenon we see so often today in cities and larger towns.

Now with the advent and growth of telecommuting, new forces are beginning to be felt in this constantly evolving demographic dance. Telecommuting is not only changing traffic and living patterns around our cities, but it is actually accelerating growth into certain suburban and rural areas. By freeing people from the need

to drive to work five days a week, it makes — extra ten or twenty miles of commuting distance less onerous and costly.

So far, there is little or no evidence that telecommuters tend to originate at, or move out to, greater distances from their jobs. But so what? This may never happen, if only because more and more employers are dispersing their jobs out — where the people they want actually live, rather than centralizing employment in expensive and decaying cities. If jobs continue to follow people out to the suburbs and rural areas, the distance for an average physical commute may actually shorten in years to come.

But the long-term impacts of the shifts due to telecommuting may nevertheless create significant, new patterns in the demographic cross-section of both cities and rural areas.

New research seems to show that telecommuting — still attracting older employees, as well as those at the higher levels of education, management, and the professions. They use the

freedom telecommuting gives them—as well as their greater affluence, family emphasis — child-rearing and good schools, and reduced desire for a vigorous nightlife—to justify living farther away from central city areas. Meanwhile, younger people continue to opt for living situations much nearer to "where the action is," not only for the fun of it, but because they often have less opportunity to eliminate their physical commutes to work through telecommuting.

The result is likely to be a long-term population tidal wave of immense proportions, with older, more successful, and more family-oriented telecommuters living farther out from central cities that are dominated by younger and less affluent people.

This is not to say that all rich telecommuters will stay away from every city. But there's reason to believe we'll see fewer of them in urban centers than — suburban and rural communities. ■

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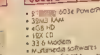
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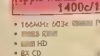
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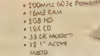
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
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UNIX continued

Interest in binary portability for UNIX systems, however, has never been higher. On one hand, Java, with its "Write Once, Run Anywhere" campaign, has focused a lot of public attention on binary portability. At the same time, competitive pressures from Windows NT are forcing the UNIX application community to look for more efficient, less costly development procedures, and binary portability offers the prospect of bringing UNIX applications to the widest market with the least cost.

86open

In August 1997, a number of developers who have worked on the different varieties of UNIX for Intel-based computers formed an informal group to address areas of common interest across the different UNIX-on-Intel implementations. The group adopted the name "86open," and its first project

is to establish binary compatibility for a wide range of UNIX systems on Intel machines.

The operating systems initially targeted by the 86open Group's project include BSDI, FreeBSD, Linux, NetBSD, SCO OpenServer, SCO

Interest in binary portability for UNIX systems, however, has never been higher. Competitive pressures from Windows NT are forcing the UNIX application community to look for more efficient, less costly development procedures.

UnixWare, and Sunsoft Solaris X86. This is an unusual list. It includes both commercial and freeware versions of UNIX-on-Intel, and it includes products from different parts of the UNIX family tree.

The 86open Group has also resolved to implement binary compatibility natively. This means that a binary created on any of the participating platforms can be run without modification on any other participating platform. (The

alternative to native implementation is to achieve binary compatibility by "emulation." One platform is chosen as the development environment and binaries from this platform can be executed on the other platforms by a program that provides a soft-emulation of the development system.)

To implement binary compatibility across the participating platforms, the 86open Group will create a specification and a reference implementation for a shared library of the basic functions callable from C and C++ programs.

On most UNIX systems, these functions are

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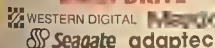
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UNIX continued from page 70

implemented in a C library named libc. Among the system-specific versions of libc, however, the interfaces to system services are not consistent from UNIX implementation to another. The 86open Group's plan will provide a version of libc that bridges the differences between the various operating systems, and programs built using this common library will be runnable on any other system where the library is installed.

Will this work?

No one knows for sure, but there are encouraging signs. On the technical side, there is at least one successful project (lxrun) to run Linux binaries on SCO UNIX systems using a shared library that bridges the gap between Linux specific functions and their SCO equivalents. The 86open Group's plan seems to be technically feasible.

Has Your Father's Consortium

No less important than its technical merit is what the 86open Group represents culturally.

86open is not a vendor consortium; its members represent themselves and not the companies they work for. They work on the 86open Project voluntarily. Because the group's members are software developers, they have a unique opportunity to focus on a technical solution for UNIX-on-Intel binary compatibility without the distraction of either business or marketing concerns.

In some respects, 86open resembles the Internet Engineering Task Force (IETF) which manages Internet standards, though to date, 86open has declared that it is not a standards organization. Understandably so: all too often, UNIX standards have been either strategic weapons or treaties to settle turf wars. 86open intends to pursue a work and track the Open Group's Single UNIX Specification as closely as possible.

The 86open Group is a hopeful sign that UNIX, whether it makes for good dinner conversation or not, is still alive.

If the conversation lags tonight, I'll ask Margaret about magnetic resonance imaging. ■
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RESOURCES:

86open Group

URL: <http://www.telly.org/86open>

The "lxrun" Project

URL: <http://dotask.coltech.edu/lxrun>

Intel Binary Compatibility Specification:

Intel386 Family Binary

Compatibility Specification ■

Intel/McGraw Hill, 1992

ISBN 0070312192

System V Binary Compatibility

Unix System V Binary Compatibility Specification

Prentice Hall, 1990

ISBN 013877580X

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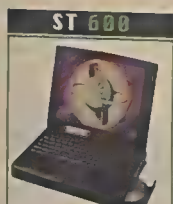
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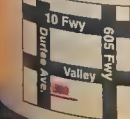
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The Making Of An Internet Startup—Part XVI

Venture In The Valley

We continue our elongated discussion about venture capital in the Valley with some random but important topics

Please, Sir, May I Have Another?

As protection against investment risk—and all start-ups have investment risk—a VC will have you sign a rather brief (by legal contract standards) Term Sheet that's used as an outline for a more monstrous Purchase Agreement.

Make sure you know what every line in a Term Sheet means. Every line. You'll find a lot of tough terms and really tough terms. You'll feel like saying, "Please, Sir, may I have another?"

But don't. Rather, pretend you're putting money into a business professional that you've recently met but don't really know. Pretend you've put money into other business professionals and haven't gotten a penny back. You'll come to the conclusion that caution, more than greed, drives the successful venture capitalist.

But why pretend? Why not actually invest some of your own money in your business? Doing so does two really great things: (1) Putting your "money where your mouth is" always impress your investing partner, and (2) you'll have a greater sensitivity to terms that are tough and fair vs. tough and abusive.

Let's Talk Terms

Here's a secret: Not everything a VC says is standard in a Term Sheet. Sometimes, a VC only hopes it becomes standard, as if saying it enough might make it so.

Knowing what is standard and what is simply

common is critical: You can't negotiate away standard provisions; however, you have some latitude with the common ones.

Here is something that's standard but seems wacky: It's standard for the company receiving money to pay the legal fees of the investors. That means you're paying your legal fees and theirs. The people with the least amount of money pick up the tab for everyone. Go figure. But, it's not standard that you have to pick up their entire amount. Don't let a VC push you over a \$10K cap (Magically, the legal fees from our investors came in at \$10,400. Amazing coincidence, huh?)

How do you know the difference between standard and merely common terms? You do your homework. You ask a lot of questions to people who know what's what. Your lawyer is a candidate here. Entrepreneurs who have been through the process are, too. If you have a great friend who is/was in the venture business, so much the better.

Don't just ask questions, but do a little reading, too. (Uhm, I guess that's what you're doing now.)

There are great "How To" books out there that cover this topic, like *Engineering Your Start-Up* by Michael Bard. The great part about references like this is they will teach you the language of venture financing, the first step to understanding the venture world.

After talking to enough people, you'll learn about "antidilution" protection and why it's considered standard in a Term Sheet. You'll also

find out about "participating preferences" and why, even though VCs will tell you they're standard operating procedure, they aren't.

How Much Is That Doggie In The Window?

What's your company worth? Finally, the \$64 question. The answer: "It depends."

Do you have a successful track record? You get big bonus points for this. Have you assembled an experienced team? More bonus points. Have

you eliminated technical risk (i.e., do you have a product)? Add more points. Have you eliminated marketing and sales risks (i.e., do you have product reviews, a brand-name, customers, and all important revenues)? Add potentially lots more points.

If you're in a "hot" area—for example, everyone's jumping on the e-commerce bandwagon today—you'll see even more dollar signs in a

VC's eyes. (You won't find too many VCs in Silicon Valley investing in packing materials, desktop word processors.)

Notice I haven't said, "Do you have a great idea?" That's because everyone at this level is supposed to have a billion-dollar idea. You can't even start the process without one.

How does all of this translate into a cold, hard number? Before I throw out some ranges, one last disclaimer: Every period in venture history is different. Valuations today are multiples higher than they were just a few years back. Valuations a few years from now might be a few multiples lower.

NOTICE I HAVEN'T SAID, "DO YOU HAVE A GREAT IDEA?" THAT'S BECAUSE EVERYONE AT THIS LEVEL IS SUPPOSED TO HAVE A BILLION-DOLLAR IDEA. YOU CAN'T EVEN START THE PROCESS WITHOUT ONE.

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ATI 2D 100MB SEC. 128	\$279
ATI 2D 100MB SEC. 128	\$299
ATI 2D 100MB SEC. 128	\$319
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ATI 2D 100MB SEC. 128	\$359
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ATI 2D 100MB SEC. 128	\$559
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ATI 2D 100MB SEC. 128	\$739
ATI 2D 100MB SEC. 128	\$759
ATI 2D 100MB SEC. 128	\$779
ATI 2D 100MB SEC. 128	\$799
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ATI 2D 100MB SEC. 128	\$839
ATI 2D 100MB SEC. 128	\$859
ATI 2D 100MB SEC. 128	\$879
ATI 2D 100MB SEC. 128	\$899
ATI 2D 100MB SEC. 128	\$919
ATI 2D 100MB SEC. 128	\$939
ATI 2D 100MB SEC. 128	\$959
ATI 2D 100MB SEC. 128	\$979
ATI 2D 100MB SEC. 128	\$999

3DFX Voodoo RUSH 64BIT 6MB
\$129

CD ROM DRIVE

TOUCHER 218 CD-ROM	\$79
TOUCHER 228 CD-ROM	\$99
TOUCHER 238 CD-ROM	\$119
TOUCHER 248 CD-ROM	\$139

24X EIDE CD-ROM \$54

MITSUMI 1.44 FDD \$16

SOUND CARDS

TANAKA 3D SOUND	\$39
PCI WAVEBLASTER SOUND	\$59
PCI WAVEBLASTER SOUND	\$79
PCI WAVEBLASTER SOUND	\$99
PCI WAVEBLASTER SOUND	\$119
PCI WAVEBLASTER SOUND	\$139
PCI WAVEBLASTER SOUND	\$159
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PCI WAVEBLASTER SOUND	\$959
PCI WAVEBLASTER SOUND	\$979
PCI WAVEBLASTER SOUND	\$999

SOUND BLASTER AWE 64 SOUND \$69

MONITOR

NI 1024X768	\$119
DIGITAL 1280X1024	\$179
DIGITAL 1280X1024	\$329
DIGITAL 1600X1200	\$389

MAG 10

MAG 17" MAG D1700 .26	\$489
MAG 17" MAG D1700 .26	\$559
MAG 17" MAG D1700 .26	\$789
17" GOLDSTAR .26	\$369

OMEGA 2001

\$1879

- *INTEL P II 233MHz *LX 512K CACHE
- *32MB SDRAM MEMORY *3.4GB ULTRA-DMA HDD
- *MITSUMI 1.44 MEMORY DRIVE
- *TOSHIBA DVD 2ND GENERATION
- *4MB OF RAMBUS DRAM
- *POWER 88 GRAPHICS
- *SUPER 3D GRAPHICS *FULL SCREEN DVD VIDEO
- *MP3-2 VIDEO PLAYBACK *AC-3 COMBIANT
- *DOLEY DIGITAL SURROUND *33.6KBAUD
- *FULL DUPLEX SPEAKERPHONE *VIDEO PHONE
- *MONSTER 3D 4MB *HOME MOVIE EDITING
- *COMPOSITE VIDEO INPUT 3 INPUT
- *"SIW 220 SUBWOOFER *GOLDSTAR 17" 26 IN MONITOR
- *LOGITECH MOUSE *MULTIMEDIA KEYBOARD
- *OMEGA 2001 CASE *SR2 3 CD WITH 95 CD & MANUAL

HARD DRIVES

1 200MB 5400 RPM	\$139
2 400MB 5400 RPM	\$149
3 600MB 5400 RPM	\$159
4 800MB 5400 RPM	\$169
5 1000MB 5400 RPM	\$179
6 1200MB 5400 RPM	\$189
7 1400MB 5400 RPM	\$199
8 1600MB 5400 RPM	\$209
9 1800MB 5400 RPM	\$219
10 2000MB 5400 RPM	\$229
11 2200MB 5400 RPM	\$239
12 2400MB 5400 RPM	\$249
13 2600MB 5400 RPM	\$259
14 2800MB 5400 RPM	\$269
15 3000MB 5400 RPM	\$279
16 3200MB 5400 RPM	\$289
17 3400MB 5400 RPM	\$299
18 3600MB 5400 RPM	\$309
19 3800MB 5400 RPM	\$319
20 4000MB 5400 RPM	\$329
21 4200MB 5400 RPM	\$339
22 4400MB 5400 RPM	\$349
23 4600MB 5400 RPM	\$359
24 4800MB 5400 RPM	\$369
25 5000MB 5400 RPM	\$379
26 5200MB 5400 RPM	\$389
27 5400MB 5400 RPM	\$399
28 5600MB 5400 RPM	\$409
29 5800MB 5400 RPM	\$419
30 6000MB 5400 RPM	\$429
31 6200MB 5400 RPM	\$439
32 6400MB 5400 RPM	\$449
33 6600MB 5400 RPM	\$459
34 6800MB 5400 RPM	\$469
35 7000MB 5400 RPM	\$479
36 7200MB 5400 RPM	\$489
37 7400MB 5400 RPM	\$499
38 7600MB 5400 RPM	\$509
39 7800MB 5400 RPM	\$519
40 8000MB 5400 RPM	\$529
41 8200MB 5400 RPM	\$539
42 8400MB 5400 RPM	\$549
43 8600MB 5400 RPM	\$559
44 8800MB 5400 RPM	\$569
45 9000MB 5400 RPM	\$579
46 9200MB 5400 RPM	\$589
47 9400MB 5400 RPM	\$599
48 9600MB 5400 RPM	\$609
49 9800MB 5400 RPM	\$619
50 10000MB 5400 RPM	\$629

IBM ULTRA DMA 6.4GB HDD...\$319
IBM ULTRA DMA 8.4GB HDD...\$379

FAX MODEM

Robotics

US ROBOTICS FAX 28800 FAX	\$135
US ROBOTICS FAX 28800 FAX	\$145
US ROBOTICS FAX 28800 FAX	\$155
US ROBOTICS FAX 28800 FAX	\$165
US ROBOTICS FAX 28800 FAX	\$175
US ROBOTICS FAX 28800 FAX	\$185
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US ROBOTICS FAX 28800 FAX	\$975
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CASES

MINI TOWER CASE W/ DOOR CASE	\$24
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SMALL OFFICE/HOME OFFICE • BY BIRRELL WALSH

May I Have This Dance?

Creating Temporary Federations, Task Forces,
And Joint Ventures With Other Small Businesses

One moment

you don't know them; the next moment you are in a major project with them. This is the sort of short-term, project-based operation we are all suddenly involved in these days. Originally only large businesses created such joint ventures. Now everyone is doing it. How can we learn to dance, we handle changing part-

with some grace? We might have a convention to produce. We hire a company to handle setting up the booths. We rent a building where the convention can happen. We enter a joint venture with Evelyn, who provides trained staff for events like this. We call Joe, to whom we owe a favor, and he signs on as the caterer

find compatible organizations, smoothly to integrate with them for a project, and then graciously to part with them. Each of these processes calls for software tools.

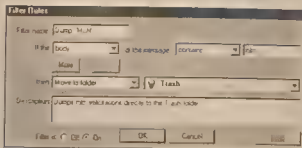
There might be one or two large corporations in this mix, and a dozen small businesses. Legally we may be joint-venture partners, clients, independent contractors, even tempo-

invitation to other providers to tell us about more.

Finding Partners

Problem: To a large extent we choose to work with people we know. We call Evelyn lot because we have worked with them before, and we know how they perform.

But what if we need to find a partner in Delhi? We want someone who is technically savvy and who does translations into the languages of India. Where do we turn? If we know somebody in Delhi, we might call and ask them. If we know somebody from North India, we might ask them. But if we don't, we are likely to turn to the Web. We need a tool that will take our criteria and search the Web for us.



This is the future of small business:

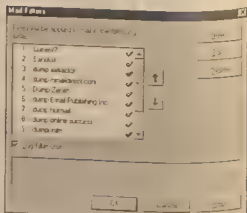
We will be many, many small businesses making temporary federations and then dissolving them. We will need to find compatible organizations quickly, to integrate with them for a project smoothly, and then to part with them graciously.

Our client wants to be touch a true, to see how the convention is coming along, does their firm

This is how the future of small business be, it seems to me. We will be many, many businesses making temporary federations and then dissolving them. We will need quickly to

employees. Yet for a while we have act as if we company. How we create the infrastructure that will let us work together?

This month's column is a discussion of the tools available from just two companies—Quarterdeck and Netscape—and



Sample Solution: My current favorite in this category is WebCompass, from Quarterdeck. It was reviewed in issue 166 of *MicroTimes*. article to visit if you are looking for a Web-search tool? That's <http://www.microtimes.com/166/soho.html>

WebCompass takes any criteria that you may give it and goes out on the Web by itself. It sends

continued on page 210



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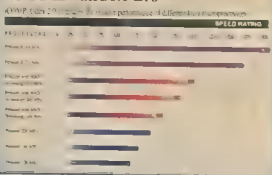


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\$89⁹⁹

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56K Voice Fax Modem

- Internal V.34
- Rockwell Chipset



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CPU, MEMORY, MOTHERBOARDS

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Memory

5x32 EDO
or
8x32-60

\$69⁹⁹

16 MB

Memory

4x32 EDO
or
4x32-60

\$34⁹⁹

8 MB

Memory

2x32 EDO
or
2x32-60

\$19⁹⁹

4 MB

Memory

1x32 EDO
or
1x32-70

\$12⁹⁹

SDRAM

Synchronous Dynamic RAM

2X64 (16MB DIMM)

\$ 39⁹⁹

4X64 (32MB DIMM)

\$ 69⁹⁹

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\$189⁹⁹

16X64 (128MB DIMM)

\$429⁹⁹

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Pentium III 300

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Pentium III 266

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Pentium III 233

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Pentium 233 MMX

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AMD K6-166

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6x86MX P166+

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6x86 P166+

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AMD K6

MAX PROCESSOR

Cyrix 686

MAX PROCESSOR

AMD K6

MAX PROCESSOR

AMD K6 Processor

Intel Triton TX Motherboard

512K Pipeline Burst Cache

K6-166 MMX

\$ 209⁹⁹

K6-200 MMX

\$ 259⁹⁹

K6-233 MMX

\$ 299⁹⁹

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Intel Pentium II Processor

ATX Motherboard w/ AGP

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Cyrix 686

MAX PROCESSOR

6x86MX Processor

Intel Triton TX Motherboard

512K Pipeline Burst Cache

6x86MX-166

\$179⁹⁹

6x86MX-200

\$199⁹⁹

6x86MX-233

\$279⁹⁹

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Intel Pentium® MMX Processor

Intel Triton TX Motherboard

512K Pipeline Burst Cache

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Pentium® 200 MMX

\$279⁹⁹

Pentium® 233 MMX

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MOTHERBOARDS



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- New 440LX AGP chipset
- Pentium II, ATX Form factor
- 3x168-Pin DIMM
- 4xPCI / 2xISA / AGP Slots
- On Board Analog Sound Card

233	266	300
\$529	\$709	\$979
\$333	350	400
\$333	N/A	N/A

\$239⁹⁹



intel®

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- Dual Pentium II, ATX factor
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- On Board 10/100 Network Card

233	266	300
\$589	\$769	\$1,039
\$333	300x2	333x2
\$349	\$379	\$279

\$599⁹⁹



intel®

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- 512K Pipeline Burst Cache
- Intel Trilon 430TX, 75-233 MHz
- ATX Form Factor
- 2x168-Pin DIMM
- 4xPCI / 3xISA Slots
- Dual Ultra DMA & Hi-Speed I/O

166mm	200mm	233mm
\$289	\$389	\$489

\$169⁹⁹



ASUS

P2L97

- Pentium II 233-333 MHz
- New Intel 440LX AGP Chipset
- 3x168-Pin DIMM, SDRAM, EDO, ECC
- 5xPCI / 2x ISA / AGP slots
- Ultra DMA / 33, ATX Form Factor

233	266	300
\$469	\$649	\$829
\$333	350	400
\$333	N/A	N/A

\$179⁹⁹



ASUS

P2L97-S

- Pentium II 233-333 MHz
- New Intel 440LX AGP Chipset
- 3x168-Pin DIMM, SDRAM, EDO, ECC
- 5xPCI / 2x ISA / AGP slots
- Ultra DMA / 33, ATX Form Factor
- Adaptec Ultra Wide SCSI

233	266	300
\$589	\$769	\$949
\$333	350	400
\$333	N/A	N/A

\$269⁹⁹



ASUS

P2L97-DS

- Pentium II 233-333 MHz
- New Intel 440LX AGP Chipset
- 4x168-Pin DIMM, SDRAM, EDO, ECC
- 4xPCI / 2xISA / AGP slots
- 4xPCI / 3xISA Slots
- Adaptec 2940 Ultra SCSI

233	266	300
\$719	\$899	\$1,119
\$333	300x2	333x2
\$1,119	\$1,809	\$2,209

\$429⁹⁹



ASUS

TX97-E

- 512K Pipeline Burst Cache
- Intel Triton TX Chipset, 75-233MHz
- Pentium, MMX, 686, 82, AMD K5, K6
- 2x168-Pin & 4x72-Pin SDRAM
- 3xISA & 4xPCI / 1x Media Bus
- Dual Ultra33 EIDE & Hi-Speed I/O

166mm	200mm	233mm
\$259	\$329	\$429
K6-166	K6-200	K6-233
\$269	\$309	\$349
\$329	\$349	\$429

\$139⁹⁹



ASUS

TX97

- 512K Pipeline Burst Cache
- Intel Triton TX Chipset, 75-233MHz
- Pentium, MMX, 686, 82, AMD K5, K6
- 3x168-Pin & 4x72-Pin SDRAM
- 4xPCI / 4xISA / 1xMediaBus
- Dual Ultra33 EIDE & Hi-Speed I/O

166mm	200mm	233mm
\$259	\$329	\$429
K6-166	K6-200	K6-233
\$269	\$309	\$349
\$329	\$349	\$429

\$139⁹⁹



ECC

PA-2007

1MB Pipeline Burst Cache

- VIA Apollo Chipset, 100MHz
- Pentium, MMX, 686, 82, AMD K5, K6
- 2x168-Pin & 4x72-Pin SDRAM
- 3xISA / 4xPCI
- Dual EIDE & Hi-Speed I/O

166mm	200mm	233mm
\$249	\$319	\$419
K6-166	K6-200	K6-233
\$259	\$299	\$339
\$319	\$339	\$419

\$129⁹⁹



Iwill

P55XUW

- 512K Pipeline Burst Cache
- Intel Triton TX, ATX Form Factor
- Pentium, MMX, 686, 82, AMD K5, K6
- Adaptec Ultra Wide SCSI
- 4x72-Pin SDRAM, 2x168-Pin DIMM
- 5xPCI / 3xISA Slots

166mm	200mm	233mm
\$289	\$409	\$509
K6-166	K6-200	K6-233
\$299	\$419	\$499
\$329	\$349	\$429

\$249⁹⁹



Iwill

P55XB2

- 512K Pipeline Burst Cache
- Pentium, MMX, 686, 82, AMD K5 & K6
- 2x168-Pin DIMM, 4x72-Pin SDRAM
- 5xPCI / 3xISA Slots

166mm	200mm	233mm
\$229	\$309	\$409
K6-166	K6-200	K6-233
\$239	\$289	\$329
\$269	\$289	\$329

\$119⁹⁹



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- Intel 440LX AGP Chipset
- Pentium II 233-333MHz +
- Adaptec Ultra Wide SCSI
- Adaptec RaidBus Ready
- 4x168-Pin DIMM, 1024MB Buff
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\$599	\$709	\$809
\$333	350	400
\$333	N/A	N/A

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MOTHERBOARDS



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- Dual Pentium II 233-333MHz +
- New 440LX AGP chipset
- 4x168-Pin DIMM
- 4xPCI / 3xISA / AGP Slots
- Adaptec Ultra Wide SCSI

233	266	300
\$719	\$899	\$1,119
333	360	390
\$1,319	\$1,599	\$1,829

\$429⁹⁹



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P5MMA98

- 512K Pipeline Burst Cache
- Intel MMX, 75-233MHz, 100 Form Factor
- Pentium, MMX, SDRAM, 128, 256, 512 Ks
- 4x25-Pin SIMM & 2x168-Pin DIMM
- 4xPCI / 4xISA Slots
- 4x Ultra33 EIDE & Hi-Speed VIO

200MHz	233MHz
\$259	\$329
K6-166	K6-233
\$259	\$329
166MHz	200MHz
\$229	\$299

\$139⁹⁹



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P5MMS98

- 512K Pipeline Burst Cache
- Intel Triton 4207X, 75-233MHz
- Pentium, MMX, SDRAM, 128, 256, 512 Ks
- 4x72-Pin SIMM & 2x168-Pin DIMM
- 4xPCI / 4xISA Slots
- Dual Ultra33 EIDE & Hi-Speed VIO

166MHz	200MHz	233MHz
\$249	\$349	\$449
K6-166	K6-200	K6-233
\$249	\$349	\$449
166MHz	200MHz	233MHz
\$249	\$349	\$449

\$129⁹⁹



ABIT
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LX6

- Pentium II 233-333MHz
- 4x168-Pin AGP Chipset
- AGP, SDRAM, Ultra DMA Support
- 4x 168-Pin DIMM
- 4x PCI / 3xISA / AGP Slots

233	266	300
\$479	\$699	\$899
333	350	400
\$599	N/A	N/A

\$189⁹⁹



ABIT
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PX5

- 512K Pipeline Burst Cache
- Intel Triton TX Chipset, 75-233MHz
- Pentium, MMX, SDRAM, 128, 256, 512 Ks
- 4x72-Pin SIMM & 2x168-Pin DIMM
- 4xPCI / 4xISA Slots

166MHz	200MHz	233MHz
\$259	\$329	\$399
K6-166	K6-200	K6-233
\$259	\$329	\$399
166MHz	200MHz	233MHz
\$259	\$329	\$399

\$109⁹⁹



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SUPER MICRO COMPUTER INC.

P6SLA

- Pentium II 233-333MHz
- 4x168-Pin AGP Chipset
- AGP, SDRAM, Ultra DMA Support
- 3x 168-Pin DIMM
- 4x PCI / 3xISA / AGP Slots

233	266	300
\$479	\$699	\$899
333	350	400
\$599	N/A	N/A

\$169⁹⁹



TYAN
COMPUTER

Titan Turbo ATX-2

- 512K Pipeline Burst Cache
- Intel Triton TX, 75-233MHz
- Pentium, MMX, SDRAM, 128, 256, 512 Ks
- 6x72-Pin SIMM, 2x168-Pin DIMM
- 4xPCI / 3xISA Slots
- Dual Ultra33 EIDE & Hi-Speed VIO

166MHz	200MHz	233MHz
\$249	\$349	\$449
K6-166	K6-200	K6-233
\$249	\$349	\$449
166MHz	200MHz	233MHz
\$249	\$349	\$449

\$129⁹⁹



TYAN
COMPUTER

Titan Turbo AT-2

- 512K Pipeline Burst Cache
- Intel Triton TX, 75-233MHz
- Pentium, MMX, SDRAM, 128, 256, 512 Ks
- 4x72-Pin SIMM, 2x168-Pin DIMM
- 4xPCI / 4xISA Slots
- Dual Ultra33 EIDE & Hi-Speed VIO

166MHz	200MHz	233MHz
\$259	\$329	\$399
K6-166	K6-200	K6-233
\$259	\$329	\$399
166MHz	200MHz	233MHz
\$259	\$329	\$399

\$119⁹⁹



TYAN
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Tiger LX

- Pentium II 233-333MHz
- New Intel 440LX AGP chipset
- 4x168-Pin DIMM
- 5xPCI / 2xISA / AGP slots
- AGP, SDRAM, Ultra DMA Support

233	266	300
\$479	\$699	\$899
333	350	400
\$599	N/A	N/A

\$199⁹⁹



TYAN
COMPUTER

Dual Tomcat IV

- 512K Pipeline Burst Cache
- Intel Triton 4207X, 75-233MHz
- Supports Single or Dual Processor
- Pentium, MMX, 6868, AMD K5
- 6x72-Pin SIMM, 2x168-Pin DIMM
- 4xPCI / 3xISA Slots

166MHz	200MHz	233MHz
\$249	\$349	\$449
K6-166	K6-200	K6-233
\$249	\$349	\$449
166MHz	200MHz	233MHz
\$249	\$349	\$449

\$189⁹⁹



intel
Chipset

Intel Triton TX

- 512K Pipeline Burst Cache
- Intel Triton 4207X, 75-233MHz
- Pentium, MMX, 6868, AMD K5 & K6
- 4x72-Pin SIMM, 2x168-Pin DIMM
- 4xPCI / 3xISA Slots
- Dual Ultra33 EIDE & Hi-Speed VIO

166MHz	200MHz	233MHz
\$249	\$349	\$449
K6-166	K6-200	K6-233
\$249	\$349	\$449
166MHz	200MHz	233MHz
\$249	\$349	\$449

\$89⁹⁹



intel
Chipset

VX Pro

- 512K Pipeline Burst Cache
- VIA VX Pro chipset, 75-233MHz
- Pentium, MMX, SDRAM, 128, 256, 512 Ks
- 4x72-Pin SIMM, 1x168-Pin DIMM
- 4xPCI / 3xISA Slots
- Dual Ultra33 EIDE & Hi-Speed VIO

166MHz	200MHz	233MHz
\$249	\$349	\$449
K6-166	K6-200	K6-233
\$249	\$349	\$449
166MHz	200MHz	233MHz
\$249	\$349	\$449

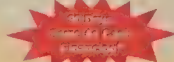
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- 128K Buffer
- 5400 RPM
- 3 Year Warranty



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- 33MB/sec Ultra DMA
- <10ms Access Time
- 256K Buffer
- 5400 RPM
- 3 Year Warranty



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Quantum

6.4GB Ultra ATA

- Fireball 36400SE
- 33MB/sec Ultra DMA
- <10ms Access Time
- 128K Buffer
- 5400 RPM
- 3 Year Warranty



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- 128K Buffer
- 5400 RPM
- 3 Year Warranty



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- 3 Year Warranty



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- 128K Buffer
- 5400 RPM
- 3 Year Warranty



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- 512K Buffer
- 5400 RPM
- 3 Year Warranty



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IBM

6.4GB Ultra ATA

- DHEA 34600A
- 33MB/sec Ultra DMA
- 9.5ms Access Time
- 512K Buffer
- 5400 RPM
- 3 Year Warranty



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IBM

8.4GB Ultra ATA

- DHEA 34800A
- 9.5ms Access Time
- 33 MB/sec Ultra DMA
- 512K Buffer
- 5400 RPM
- 3 Year Warranty



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Cheetah**

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- 7200 RPM
- 512K Buffer
- 40MB/sec Transfer Rate
- 3 Year Warranty

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Ultra Wide SCSI**

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- 512K Buffer
- 40MB/sec Transfer Rate
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Seagate

**9.1GB UW
Ultra Wide SCSI**

- 8ms Access Time
- 7200 RPM
- 512K Buffer
- 40MB/sec Transfer Rate
- 3 Year Warranty

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**9.1GB UW
Cheetah**

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- 7200 RPM
- 512K Buffer
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2940UW

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Internal, QIC-3095 TR4, Tape Included

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Seagate

8.0GB

Tape-Stor

10GB Native, 0.5GB Compressed SCSI-2

Internal, QIC-3095 TR4, Tape Included

\$279⁹⁹



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100MB External Parallel
100MB External SCSI-2
100MB Internal IDE
100MB Internal SCSI-2

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10mega.**

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CD-ROM

- 120ms Access Time
- 128K Buffer
- 4.8MB/Sec Transfer



\$89⁹⁹

TOSHIBA

24X EIDE CD-ROM

- 90ms Access Time
- 256K Buffer
- 3.6MB/Sec Transfer



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- 80ms Access Time
- 256K Buffer
- 4.8MB/Sec Transfer



\$99⁹⁹

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32X SCSI-2 CD-ROM

- 80ms Access Time
- 256K Buffer
- 4.8MB/Sec Transfer



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- 90ms Access Time
- 128K Buffer
- 3.6MB/Sec Transfer
- MPC 3 compliant



\$79⁹⁹

Panasonic

24X SCSI-2 CD-ROM

- 90ms Access Time
- 128K Buffer
- 3.6MB/Sec Transfer
- MPC 3 compliant



\$139⁹⁹



PLEXTOR

32X SCSI CD-ROM

- 80ms Access Time
- 512K Buffer
- 4.8MB/Sec Transfer



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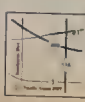
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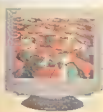
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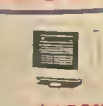
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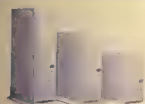
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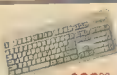
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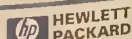
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Small Office/Home Office continued from page 82

requests on your behalf to dozens of search engines, and returns with the addresses of all pages which may match your needs. Then it takes a deep breath, and sends for the pages themselves. It summarizes each page with a pretty-good artificial intelligence program. Then it does its best to rank the pages by their degree of match to your needs. It will also repeat the search and update automatically on any calendar you want.

gateway to considerable power in pre-reading your mail, and getting (some) control over message traffic.

When you open up the "mail filters" item, you are invited to create a new filter. The process is pretty much self-explanatory. You are asked to name the filter. Then you are asked to create a rule. The form is, "If the W of the message X's Y, then do Z." The W's can be sender, subject, body, date, priority, and

news, but who has time to read them all? The same is true of mailing lists. You can have filters survey threads in a mailing list or Usenet. If the filters find a keyword you are interested in, they can mark the thread to be watched and move the message to a "possibly interesting" folder.

You can have more than one criterion in a filter. One interesting use is code-marking. This is of great help when email communications are not secure. You can create an agreement with a correspondent by which any real message will have (say) the word "the" in the subject and the word "isn't" in the body. Both of these are common in messages and will draw little attention. You can then send dozens of messages, most of which have false information. But only if both code-marks are present will your filter catch the message and send it off to a special "real message" folder. All other messages from that sender can just as automatically be placed in a "spurious message" folder. An outsider will be able to watch the messages go by, and even read them, but will not know which ones are genuine.

While writing this column I spoke to Tawana Clark, the PR person at Quarterdeck, she suggested another solution for managing project communications: Procomm Plus 32. Ordinarily I put software through its paces before recommending it, but the deadline looms. I will just tell you what Procomm is supposed to do. It is apparently a truly complete communications package. It contains an email system, a browser (they use Microsoft's Internet Explorer), a fax system, optical character recognition for those faxes, a terminal emulator for thirty-six different terminal protocols, FTP for transferring files, Telnet, a Remote Control system to operate a distant computer from your own—and a scripting language that is capable of starting and running other Windows and NT applications as well as controlling all the features of Procomm. With this program you could design a fully customized communication system. Then, after your joint venture used it, you could sell the design to others.

Can Procomm really deliver all this? If we were any other program, I would doubt the claim—but Procomm has more than ten years of being a top-of-the-line communications package. I

continued on page 104

A major problem in any email system is the unsolicited message. My favorite filter, so far, is "If the contains any hint of being spam, then move the message to the Trash."

Products Needed We need even better Web-search tools, of course. Quarterdeck is planning a new release of WebCompass in the spring. But we also need services. We need matchmakers who will connect small companies who are looking for partners. We need directories of those services. And we very much need evaluators. *Consumer Reports* has made its reputation by even-handedly evaluating all kinds of consumer products. We need online services that evaluate potential short-term partners.

Integration

Problem: When you have joined with another small business, you need a way to integrate your operations. You need to be able to route messages, exchange documents, "sympathize your watches," and arrange online meetings.

Sample Solution One of the problems in any collaborative project is the routing of messages. It's bad when you have just a few things going on, but when there are dozens of people working and each is sending out messages, you need a way to sort them.

Did you know you can build filters to pre-read your email and sort it? Netscape Navigator in its fourth version, a part of the Communicator. Under the "file" menu of Netscape mail it has "mail filters." This is a

recipients. The verb (X) can be "contains," "doesn't contain," "is," "isn't," "begins with" or "ends with." What (Y) looks for (Y) can be any text. And the possible actions include moving to a certain folder, changing the priority, marking the message as read, watching the thread, ignoring the thread, or just deleting the message.

A major problem in any email system is the unsolicited message. My favorite filter, so far, is "If the contains any hint of being spam, then move the message to the Trash." Every time I get a new message that might be spam, I now read it with enthusiasm, looking for clues. Does it say "mlm" (for Multi-Level Marketing)? Off to the recycler! Does it come from known spam-sites? Shred it! I have created filters to flag any message that contains six different clues to spam-hood.

This same kind of filtering is ideal for sorting project mail. You can get everyone to agree that the subject line of each message will say what part of the project it relates to. Then you can build filters that automatically preset the mail into mail-folders that deal with different aspects of the task force. Filters can also assign priorities to mail.

Finally, the Netscape filtering system can serve as a hunting dog on the Usenet. There are valuable pieces of information on the

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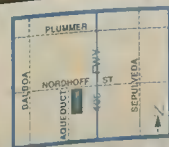
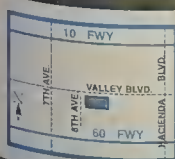


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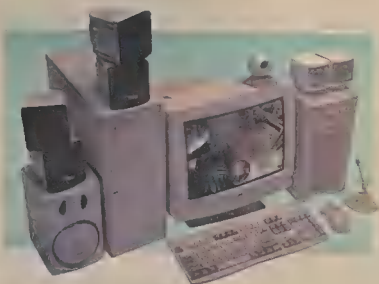




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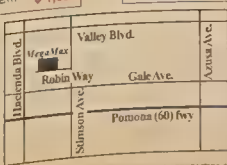
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can say the fax system works—I opened that and tried it right away. And the price for all this? \$149. That is a remarkable deal.

Products Needed: The whole field of building inter-company integration tools is wide open. We need someone to do for small-business task forces what Lotus Notes has done for the very large corporation. Tools are needed that will automatically schedule online meetings, that will watch information services and act for the group if certain criteria are met, and that will distribute information among the members. If someone could guarantee privacy to users, they could make a fortune just helping small companies to integrate with each other temporarily. We need ways to create "courtyards" that can be shared among temporary alliance partners, while their private company data is behind impermeable firewalls. And we need all this to be both cheap and trustworthy.

Authentication And Payment

Problem: If you make a short-term alliance with a company far away, you need to be able to authenticate them. You need to know that they are really who they say they are. There are unsavory software companies proudly announcing they can forge the sender names on messages.

You also need to know that you will be paid.

Sample Solution: There is one cheap and simple way to get a great deal of privacy. You broadcast information to your business partners on a Web site whose name and URL change daily. If the only people who know the URL are people who should visit it, you have relatively private communications.

If you want to be a little more professional, visit the Web pages Netscape maintains to explain a security system. You use a system of "certificates" with other users that will give you some assurance you are exchanging email with a person you think you

Certificates issued by private companies, so you will only trust a certificate you trust its issuer. Prices vary for a certificate, and so do the conditions to obtain one. But when you obtain a certificate, you can send a copy of it to those with whom you wish to correspond securely. Thereafter, when they receive mail from you, their copy of Netscape Navigator will

say, "Hey, this certificate is just like the one Joe sent you earlier."

It will also make possible encryption. The certificate they have sent you contains their "public key," a cryptographer's term for a special code. That code will allow your copy of Navigator to encrypt the message in a way only they can decrypt. While not absolutely foolproof, certificate-based encryption allows you to create a reasonably secure messaging system for your task-force or temporary federation of companies. It would take very powerful computers quite a while to crack encryption based on the certificates—but it could be done.

If you want really secure communications, you can use the "secure-sockets layer." This is based on the same idea of encrypted communications, but is only used for communication with a Web site. First you communicate with the Web site, and the site recognizes each other by an exchange of certificates. Then your system and the Web site's system jointly create a one-time encryption scheme. They pass that back and forth to each other using the certificate-based encryption system. This

private encryption scheme then becomes the one they use to exchange data. The encryption is thus two layers deep—first the encryption based on certificates, and secondly the one-time-only encryption created by the secure-sockets layer.

Products Needed: We need one standard for certificates. Presently there is a wide variety of types of certificates, as well as a wide variety of providers. There is one for Netscape, one for Internet Explorer, and a third for PGP encoding for mail. We need to have some kind of standardization for certificates, so users of all browsers can recognize them.

Payment between far-flung partners is potentially a major problem. We need someone who will accept payments in escrow, payable on confirmation that some task is completed. How we structure that remains an open question, but its existence will facilitate making agreements with people who are basically strangers.

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If your company is making a product that will help small businesses to collaborate, drop me an electronic press release (birrell@well.com). Please—I am looking for SOHO products, not something for a large company. It needs to be cheap, comprehensible to an overworked user, and reliable. ■

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BY DOUGLAS J. NAKAKIHARA

PalmPilot

Cool (And Useful, Too!)

Portable computing

is something everyone seems to want these days. Many people opt for notebook computers, but their price-performance ratio is poor, most people really have to need one to justify a purchase.

Personal digital assistants or PDAs have been quickly gaining popularity because of their size and features, but the good ones have also been a bit pricey. Moreover, PDAs are often islands unto themselves, with limited expansion and connectivity with PCs. Face it, many PDAs aren't much more than expensive toys, and can't honestly be categorized as a serious business tool.

The 3Com (formerly US Robotics) PalmPilot is one of the true exceptions. This PDA, 4.7" x 3.2" x .7"—barely larger than a deck of cards and slightly smaller than an HP-12C calculator—and weighing only 5.7 oz. with batteries, is a wonder to behold and will easily fit in your shirt pocket or purse, and comes with all of the essential applications.

Basic Features

The application interfaces appear on the large 160 pixel back-lit LCD display. (The original of the device did not have a back-lit display.) Depending on the app, you select menus, click buttons, draw graphics right on the display, using a plastic writing stylus that's specially designed not to scratch the screen.

The stylus slides neatly and securely into a little slot on the PalmPilot. I like to bet that there are no other stylus replacements as cheap as about \$2 apiece. They even send you a free one when you register.

Beneath the display is an input area. Here you enter text using a writing technique called Graffiti. The PalmPilot doesn't really hand-



writing recognition per se. What it does is require you to form each letter, number, or symbol using a special writing stroke. This means there is no "training" involved to make the device recognize your writing style; however, you must use the correct writing strokes or you'll end up with the wrong text.

Fortunately, most of the strokes are close to the way you would normally write text. For example, the stroke for the letter A is the top part of the letter, basically an upside-down letter V. Getting capital letters is simply a matter of entering a special "shift" stroke. This can be for just the character or locked as with Caps Lock on a keyboard. Special symbols (e.g., \$, %, etc.) are entered by preceding the stroke with a special mode stroke.

This is not nearly as difficult as it may sound, and it won't be long before you can enter most of the alphabet without referring to a "cheat sheet." The PalmPilot comes with a set of Graffiti reference stickers you can adhere to it. You can also access an online Graffiti listing.

You can also use a graphical keyboard as an

input device. This appears instantly when you touch a hot spot on the input area. Actually, I've found that you can enter text many times faster using this method; however, it reminds me of hunt-and-peck typing. (Do it in front of a fellow PalmPilot user and you'll likely get a sneer at "Graffiti-snobbery.") There are additional keyboard templates for numbers, special characters, and foreign letters and symbols.

Gates Was Right

To paraphrase Bill Gates a bit, maybe one-half meg of memory is enough after all, because that is all the Personal Edition of the PalmPilot includes. There is no hard storage, so everything is saved in RAM.

If this worries you a little, it shouldn't. Even with the batteries drained to the point your PalmPilot is not functioning, memory will be retained for about a month, one minute if you take the batteries out. (All data is also saved to your PC, but more on this later.)

After loading the system, you are left with 4096, however, don't let that fool you. It's plenty of space for all but the most demanding users—enough memory to hold 2,500 addresses, 2,400 appointments, 500 memos, and 500 to-do list items!

If it turns out not to be enough, you can upgrade to one meg for \$129. Of course, if you know you'll need more, just get the Professional Edition (\$369), which comes with 1MB. I should note that the 1MB upgrade gives you the functionality of the Professional Edition.

Applications

The PalmPilot ships with several full-featured apps, like a date book, address book, to-do list, memo pad, calculator, expense tracker, and some games. However, it doesn't stop there.

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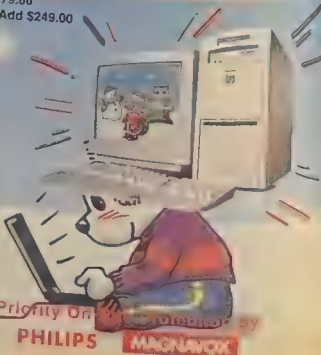
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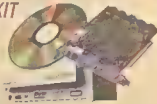
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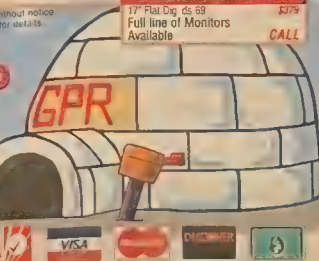
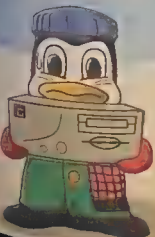
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PalmPilot continued from page 106

This is where the fun begins. There are literally hundreds, if not thousands, of commercial, freeware, and shareware applications available. Plus, many PIMs are compatible with the PalmPilot, like MS Schedule+, Lotus Organizer, Symantec ACT!, Now Up-To-Date, Sidekick, ECCO, Day-Timer Organizer, Maximizer, and Franklin Ascend 97.

Check out <http://palm.pilot3com.com> for links to many unofficial PalmPilot sites, with tons of stuff to load onto your PalmPilot. An HP-12C emulator is a must-have, and there's a plethora of sketching programs for storing maps or just doodling.

Of course, games are plentiful, with most of the classic arcade and card games available. Even though the PalmPilot only supports four colors, it's surprising just how good some of the graphical applications are. It is also capable of emitting the standard sort of beeps and chirps, although I wish you could turn the darn thing up!

There is even an Internet mailing list which you can subscribe to at www.pilotgear.com. Every day, you'll get an email message, usually listing several new apps for your PalmPilot. If you're using something like Internet Explorer or Netscape, you can click right in the message to download the program.

To be honest, it won't be addresses and appointments that will fill your memory, it will be the other applications you load onto your PalmPilot.

Hot Sync

PC versions of the supplied applications are also provided. This allows you to run those applications on your PC just as if you were using your PalmPilot. Although you are using independent data files, it will not pose a problem because you can sync the data between your PC and PalmPilot with literally the push of a button.

The PalmPilot comes with a special cradle that connects to the serial port of your PC. Your PalmPilot slips into the cradle and all data is automatically synced when you press a button. Even if your application has no PC equivalent, the data is backed up to your PC. This is how you load new applications onto your PalmPilot. You just run a little utility program on your PC that identifies the app, which is downloaded to your PalmPilot the next time you perform a hot sync.

The PalmPilot can synchronize data with Macs; however, PC desktop-dependent PalmPilot functionality, like (hot sync) email and expense-tracking application, is not available to Mac users. Mac users will also need the PalmPilot MacPac (\$14.95), which includes an adapter so your cradle can be connected to a Macintosh modem or printer port.

It won't be addresses and appointments that will fill your Pilot's memory; it will be the other applications you load onto it.

Connectivity

With 1MB of memory you can add email connectivity and TCP/IP capabilities, which will enable you to run optional network applications. This allows you to access information over a network. A network version of the Pilot's synchronization utility (\$69) lets you synchronize data (email and PIM information) over a LAN or via a dial-up connection to your desktop PC; you can remotely reply to and send new messages right from your PalmPilot.

The coolest way to use the PalmPilot for email is to either connect it directly to a modem using a special cable (\$20) or get the modem add-on (\$129). Available third-party software will let you define POP and SMTP settings, making your PalmPilot a truly portable email device. All of the applications I looked at (some were even freeware) gave you the option of leaving messages on your mail server, so you can still access them later on your PC. If not for this, large messages, like those with file attachments (useless on your PalmPilot), would be lost once your PalmPilot downloaded a truncated version. Some applications allowed you to set up filters, which might be nice for skipping voluminous non-essential sources, like mailing lists.

The PalmPilot modem adapter snaps onto the bottom and extends the length a mere two inches. It's only a 14.4Kbps modem, but that's plenty

of horsepower considering you likely won't be accessing the Web nor downloading huge email messages. (Note: A text-only Web browser is available!) It sports a standard RJ11 phone jack and comes with a 10' cable. The device is powered by two AAA batteries (included) for up to five hours of continuous use, with an optional AC adapter (\$20) available. Well, an audible low-battery warning signal is also featured.

PalmPilot Email Software

The PalmPilot Professional comes with its own email software that will work with any VIM or MAPI standard compliant email program, including Lotus cc:Mail (versions 2.5, 6.0, and 7.0), Microsoft Outlook, Microsoft Exchange 4.0, Windows Messaging 4.0, Microsoft Mail 3.5, and Windows for Workgroups Mail.

However, the software is not really a true Internet email application. What it does is utilize your existing mail application to read and send email after you perform a hot sync.

The bad news about using this software is that it always removes the messages from the mail server. To avoid this situation, there is an option that will only send email, not retrieve. Of course, if you were already at your PC, you'd just use your PC mail application to read your email anyway.

There certainly are times when you might create a message (offline) on your PalmPilot and then send it once you return to your desk. But, you really wouldn't need to use an email-capable PalmPilot to do this. You could just enter the message in the PalmPilot notepad and do a copy-paste into your PC mail compose application.

To sum it up, use your PC for email when you are at your desk. For way-cool remote email capabilities, use your PalmPilot with a modem. If you don't have a modem and are away from your PC, use your PalmPilot to compose your message.

Juice

The PalmPilot uses two standard AAA batteries. (That's right, no special batteries—not even hard-to-find watch batteries.) This is supposed to be enough juice to last you two to three months; however, your mileage may vary. For example, if you make heavy use of the backlight, battery drain will increase. I'm using rechargeable NiCads and changing batteries every few weeks with heavy use.

continued on page 126

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BY FABIAN PASCAL

32-Bit Computing

Series Groundrules: A Short Discussion Of Methodology

Last month

I discussed the forthcoming 100MHz bus systems. While waiting for them to become available, let me introduce you to the methodology I will employ to evaluate them, as well as to the current best-of-breed 66MHz reference system. (I see references to Intel's next-generation Pentium, the "Deschutes," as still supporting only the 66MHz bus!)

Operating System

For the standalone PC user, there aren't that many pure 32-bit options.

I was involved with OS/2 for a considerable time and, while it's hardly without problems, in some aspects it is better than Windows. I was still writing an OS/2 column here when many who faulted me for my criticism of IBM's handling of its OS had long migrated (quietly!) to Windows. But when IBM—validating my criticism—started promoting itself as the best Windows NT vendor, it was time to move.

The user interface, hardware support and applications are continuously improving in the Linux environment, but they are nowhere near what PC users are used to, and usually get under Windows. The several flavors of Linux are still more UNIX than PC-oriented.

Apple's Rhapsody, while interesting, is still in development and an uncertain proposition, particularly on the Intel platform.

These OSes will be monitored for this series, but whether we like it or not, Windows NT Workstation is, at least for now, basically it (some benchmarks are available only for NT, see below). As Windows 95 acquires more 32-bit capabilities and NT gets more of the Windows 95 user interface and plug 'n' play

support, they will probably converge; it is unlikely that Microsoft, given its controlling market position, will continue to maintain, upgrade and support two separate versions. In fact, there have already been warnings about Windows 98 being the last upgrade. As corporations migrate to NT, they will force both small/home businesses and individuals into it, the latter, if nothing else, to use the same software at work and home.

Performance Measurement

Benchmarking/interpreting results is the trickiest of businesses. An extremely demanding proposition, no matter how good the job is, it always leaves somebody unhappy, or angry—it's the nature of the beast. I refer the reader to URL: <http://www.intel.com/procs/perflimits.html> for a succinct explanation of benchmark types and the limits of their usefulness.

There is limited evidence that in certain narrow, specific circumstances, NT performs better than Windows 95. Be that as it may, its high hardware resource and support demands are NOT FOR EVERY PC USER.

There is limited evidence that in certain narrow, specific circumstances, NT performs better than Windows 95 (much to the surprise of many, including myself, even in some Microsoft quarters!). Be that as it may, high hardware resource and support demands are not for every PC user. Yet for those who need, want, a 32-bit operating system with a wide choice of applications and hardware support, it's the best they can do. Hopefully, Microsoft will take their needs to heart; it continues to develop NT Workstation.

I've looked into the various benchmarking software available and I opted for the recently released versions of the commonly used/referenced Winstone and WinBench by Ziff-Davis Benchmark Operations (ZD80p).

Winstone 98 is an application-based benchmark suite that measures the performance of whole PC systems. WinBench is a set of playback and synthetic test suites measuring the performance of the CPU, graphics, disk and CD-ROM subsystems. They and their results are described in the Sidebar.

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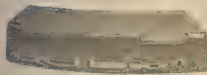
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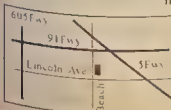
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32-Bit Computing *continued*

I will also use other benchmarks, specialized in specific subsystems, such as CDtack for the CD-ROM subsystem and ThreadMark for the disk subsystem. It is very important to keep in mind the following points when interpreting benchmark results:

- Results are not absolute, but relative to some specific base system. Thus, a Winstone score of 10.3 does not, per se, tell you anything about a system's performance; it only acquires meaning relative to the ZDBOP's base system's score of 10—it means 3% better performance. Furthermore, the scores of any two systems can be used to compare their performance, by virtue of both being relative to the same base system.

- Subsystem comparisons are meaningful only in the context of ABE—"all else being equal." The performance effects of two disk drives on a disk subsystem can only be compared by switching the drives, but keeping everything else the same (and I do mean everything: hardware, software, settings, configurations—down to active applications and disk fragmentation).

Best-Of-Breed Components

Via research into and monitoring of technologies, products and other reputable evaluations, best-of-breed hardware components (more than one candidate in each category, where possible) will be identified. Units obtainable from vendors will be assembled into working systems, reviewed and benchmarked.

Also reviewed will be components which, while not part of the subsystems, are necessary for a full working system, such as the case and system integration services.

When the dust settles in the currently fluid Internet fast technology, communication components will also be added (currently, the cost-effective option is cable modems, but it is only experimentally and very sparsely deployed). All-in-one (print/scan/copy) peripherals will be covered. USB versions become available. Protection and performance-enhancing

Sidebar: The Ziff-Davis Benchmarks

Ziff-Davis Winstone 98 and WinBench 98 benchmark suites are the time a system requires to complete specific sets of operations to produce performance scores relative to a specific base system [1]. The higher the score, the better the performance.

Winstone 98 is an application-based benchmark suite. It runs leading Windows applications through a series of scripted common activities and produces a weighted performance score for a whole system from the individual application scores, using their market-shares as weights. The benchmark has two versions, Business and High-End, the former using common business applications (such as spreadsheet, word processing and database [2]), the latter specialized for more demanding applications (such as CAD and image editing [3]) under Windows NT only. The overall score is scaled to the base system's overall score, 100, for both levels.

WinBench 98 is a set of two playback and two synthetic test suites, each producing performance scores for the processor, graphics, disk and CD-ROM subsystems. In playback tests, the hardware calls made by the applications to a subsystem while executing the Winstone scripts were logged and played back. The Graphics and Disk WinMarks playback test suites and, like Winstone, have Business and High-End versions.

Graphics WinMark 98 (playback). Measures the performance of the graphics subsystem in executing the graphics operations of the Winstone 98 application scripts. The overall relative scores for both the Business and High-End versions are compiled using the same method as in Winstone.

Disk WinMark 98 (playback). Measures the performance of the disk subsystem in executing the disk operations of the Winstone 98 application scripts. It has Business and High-End versions. The overall result, in KB/sec, reflects disk subsystem throughput.

In the synthetic tests, application activities in a subsystem were profiled and a statistical approximation of the operations on the subsystem is run. CPUMark32 and CD-ROM WinMark synthetic tests.

CPUMark32 (synthetic). Measures the processor's subsystem 32-bit performance by running a workload simulating the CPU's behavior of leading (not Winstone) Windows applications. It includes data compression, date adjustment, word analysis, text formatting and on the relative produced is a normalized, unitless number meaningful only for comparison to other WinBench 98 CPUMark32 scores.

CD-ROM WinMark (synthetic). Measures the performance of the CD-ROM subsystem by playing back one test, a mix of operations in sections, for each profiled (not Winstone) application [4]. The overall result, in KB/sec, reflects CD-ROM subsystem throughput.

Notes:

[1] Dell/Dimension P5-133: 66MHz bus, Pentium 133MHz, 256KB L2 Pipeline Burst cache, 32MB RAM, Matrox/Millennium PCI graphics adapter 4MB VRAM, driver v3.12, monitor settings: 1024 x 768 x 65K x 75Hz; primary disk controller, Quantum/Foreball IDE drive.

[2] Microsoft Access 97, Excel 97, Word 97, PowerPoint 97, Lotus 1-2-3 97, Corel Quattro Pro 7, WordPerfect 7, DRAW! 7, Netscape Navigator 3.1.

[3] MicroStation 95, Adobe Photoshop 4.01, Premiere, AVS/Express II, PV Wave 6.1, Microsoft FrontPage 97, Visual C++ 5.0.

[4] Corel GALLERY 2, QuickWin Windows CD-ROM Deluxe, Doney's ScaryBook-III, King, Mpt, Campton's Interactive Encyclopedia, Microsoft Encarta 95.

devices will also be considered. There will also be reviews and recommendations of essential and stand-out software.

Based on evaluation results, recommendations will be made. Every article in the series will specify the current recommended set of components—the "best of breed system," so to speak. The configuration will be revised whenever one or more components are upgraded, "better" alternatives/technologies become available and/or affordable. For example, a LCD panel may replace the bulky monitor.

Other OSes will be monitored for this series, but whether we like it or not, Windows NT Workstation is, at least for now, basically it.

Listing 1 references the initial set of components currently being assembled for evaluation—a Slot 1/Pentium II system. It is based on a 66MHz bus system board—the current standard against which the performance gains from forthcoming 100MHz systems will be assessed.

Note that the 512KB L2 cache built into the Pentium II CPUs runs at half the processor speed and, therefore, it is not tied to the bus speed like its counterpart carried by Socket 7 system boards (which can be larger than 512KB too!). Therefore, the effect of a faster bus speed will not be as pronounced as for Slot 1 systems. Furthermore, the currently available SDRAM clocks 66MHz, which would introduce one



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"Today, the current Internet issue is cryptography and making sure people have the tools to protect themselves, as opposed to the government to catch criminals."

Sameer Parekh
C2Net, President

In 1994 while attending UC Berkeley, Sameer Parekh started Community Connexion, an ISP focused on protecting people's privacy on the Internet. At that time, he believed "the best way to deploy cryptography was to start a service where people could get accounts anonymously, send email anonymously, setup Web pages anonymously so they could protect their privacy against whoever might want to invade their privacy."

By Michael Robin • Photos By Justin Ellison

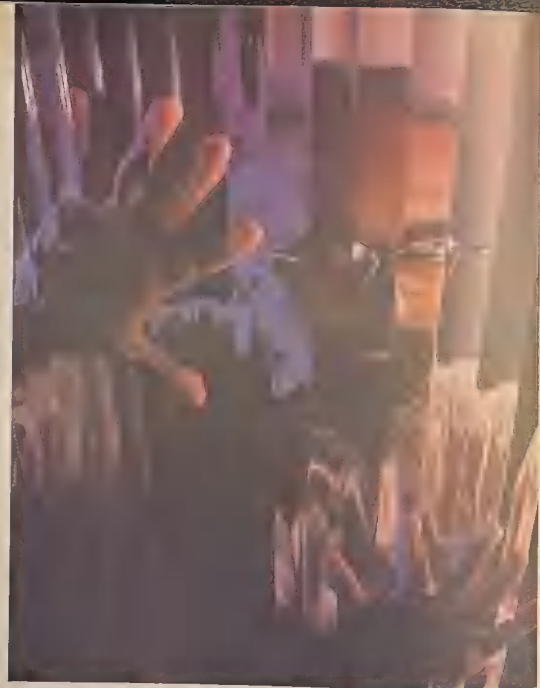
During late 1995-early 1996, Parekh was developing Internet security software to enhance Community Connection's Web servers. But, like almost everything else in the quickly evolving world online, his vision of the "best way to deploy cryptography" was also changed. He now believed that, rather than selling services, selling software was a more effective way to implement cryptography and privacy technology. By the end of 1996, he had sold off the ISP business, renamed the company to C2Net (<http://www.c2net>), opened an office in downtown Oakland, and started hiring people and developing more software. This move placed Parekh in the middle of one of the most contentious fights surrounding technology today—the role of cryptography in a democracy.

In an age of digital information, the protection of information—digital communications and stored data—becomes increasingly critical. Cryptography, the art of secret writing, is a powerful tool for protecting information. In practice, this means first the transformation of information into some unreadable form, a process known as encryption, and then the ability for authorized individuals to return this encrypted information into a readable form, a process known as decryption.

Today's hotly contested public debate on cryptography is often presented as black and white; a fight between good and evil, with each side presenting its own characterization of what is good and what is evil. On one side are those who argue for strong crypto to protect the privacy of individuals and businesses. On the other are those who claim the need to limit the spread of strong crypto for law enforcement and national security.

While each picture does have its kernels of truth, real life is rarely black and white. The technology that law enforcement argues may hinder, if not cripple, their fight against criminals, terrorists, and others, is the technology that secures sensitive communications from attacks by these same groups. So, while cryptography may be used by a small group of criminals or industrial spies, it can also ensure the security of cell phone conversations, surfing the Web from home, government records, and global financial transactions.

Further complicating the black and white dichotomy of cryptography is that cryptography and its related technologies do more than just assure the confidentiality of information. Cryptography provides tools, embodied in applications such as digital signatures and certificates, to verify the authenticity of the people



I started doing some research and learned that cryptography is a very valuable tool for protecting people, organizations, and companies from both government and criminal abuse of freedom and privacy.

communicating electronically and to ensure the integrity of digital documents. Without reliable methods for knowing who you are talking with or confirming that a particular document is both the original and unaltered, much of the promise of digital communications will never be realized.

Along with the explosive growth of the Internet in the 1990s, the things cryptography enables us to do also continue to grow. Unfortunately, current US policy restricts the discussion of cryptography on the Internet and the sale of strong encryption products on the world market. Since most US companies find it

prohibitively expensive to develop two versions of the same product—one with strong encryption for domestic use only, and another with weakened encryption for export—the level of security they offer everyone is effectively weakened. Keeping strong crypto out of the market further slows the development and implementation of new applications that require higher levels of security.

In response to US regulations, C2Net is perhaps the first US company to relocate out of its software development off-shore, permitting it to sell single versions of its products with full-strength security software worldwide. With

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offices for software development in the UK and Australia, C2Net also has a subsidiary in Anguilla, the British West Indies, to register intellectual property and manage its overseas operations.

I recently met with C2Net President Sameer Parikh at his Oakland office to discuss how he became involved in cryptography, moving C2Net's software development off-shore, and his perspective on some of today's issues surrounding the debate on cryptography.

How did you get involved in cryptography? Was there something in particular that drew your attention?

I first started getting involved in Internet privacy and civil liberty issues when the Secret Service raided Steve Jackson Games in Austin, TX, in '90. I learned about what was happening under Operation Sun Devil and realized all the things the government was doing that compromised individuals' civil liberties.

I started doing some research and learned that cryptography is a very valuable tool for protecting people, organizations, and companies from both government and criminal abuse of freedom and privacy.

Where were you at that time?

I was in high school, in the suburbs of Chicago. But I was on the Net and used various BBSes. They had raided a BBS in Chicago that I was regularly using as well.

In the wake of the Steve Jackson Games raid in Austin, the EFF (Electronic Frontier Foundation) was founded. In the beginning, the EFF itself was primarily concentrating on law enforcement's confusion. But now, law enforcement is reasonably good at understanding the Net. I wouldn't say that for high-level FBI, but if you are down at the level of people who do the real work, they are reasonably well-aware of what is going on.

Today, the current Internet issue is cryptography and making people have the tools to protect themselves, as opposed to relying on the government to catch criminals.

What do you mean by using "cryptography" to protect ourselves from criminals?

On the Internet today, cryptography is hardly used. Any organized group or organization can easily break banking systems and steal money from people's accounts. A more sophisticated group could, for example, decide to shut down the world's trading networks or order cause severe damage to the world economy. This is possible because it is not using strong cryptography widely.

This may sound somewhat basic, but many people, especially those not on the Net, don't see what the fuss is about. What is crypto and to whom does it matter?

Crypto is basically the ability to make electronic communications more real. If it's authenticated, it is signed with someone's signature that you can say, "It is from that person." If it's confirmed that it hasn't been modified, transit you can look at it and see that there is no white-out on it.

I don't think that the everyday guy on the street really needs to care about the cryptography. The people who need to care are the businesses that they work with. Say you have a guy on the street and he loses his credit card. He is out \$50. But VISA or the merchant or the bank are the ones who take the liability. I think that when companies realize that there is this huge risk they are opening themselves to, they are going to force their customers to talk to them in a secure manner.

Once consumers are forced to use this technology to communicate with companies, because the companies need to protect their own interest, then people will see the value of the technology for communicating with each other. When they are sending email to their Moms, they say, "I don't want my neighbor to see this, even though it is just about last Thanksgiving."

What would a functional crypto system look like and how would someone use it?

I am just coming up with this off the top of my head so, I might make a few mistakes.

Suppose you wanted to open an account with a bank. You would go into the bank branch, because according to all the laws they have now, they want to see you in person and to sign all the documents. The bank would give you a floppy disk with some software on it. You would stick it in your PC and install Netscape to connect to their Web site. You connect over an encrypted link, enter your account number and other secret information that they gave you when you met in person. Your browser would then generate a private/public key pair to identify yourself and send a request to the server with the public key saying, "Please sign this public key." The bank's server would send back a signed version of that public key. Now that you've got this signed copy of the public key, your PC, in the future, whenever your PC talks to the bank, it will automatically give the bank the signed public key. When your PC and the bank perform this operation, the bank knows that you own the private key associated with that

public key and will give you access to do whatever you want with your bank account.

In that case you won't need to remember a password. The risk is that someone will break into your PC and use the information on your PC to connect to your bank account. But if someone broke into your house they could just go through your filing cabinet and get the same sensitive information.

But if your computer is connected to the Net via a cable modem or ISDN, giving you a pretty live connection, your computer is less secure than your file cabinet.

Yes, the computer itself is less secure in that situation. But there are other ways around that problem. For example, there is smart card technology where you can have a card which has the key on it. Your computer may be insecure, but the computer isn't storing sensitive information. The sensitive information is stored on a card that you keep in your wallet. Whenever you sit down at your computer you can take the card out of your wallet, stick it in your computer, and the card is doing the authentication. You can even stick the card in a friend's PC, accessing your bank account from your friend's house. As long as you keep physical control of that card your friend will not have access to your bank account—even if he was watching every keystroke you typed. Was storing every bit that came out of the smart card, he still does not have the ability to access your bank account.

Storing private information on a PC is certainly not the thing that people should be doing, but in the short term, that is what people are going to do until smart card technology is deployed. Once smart card technology is deployed, it will be just like sticking your ATM card in the ATM machine, except it will be more secure because the ATMs don't use strong authentication technology.

Stronghold is your first product. What is it?

Stronghold is an Apache-based Web server. We take the latest version of Apache, add all these nifty features to it, and sell that as a commercial Web server.

Stronghold is for people who want various features that Apache doesn't have, such as commercial support, encryption, more dynamic content, more database connectivity, or more bundled log analyzers. These are all proprietary features that we have added to Apache and sell Stronghold.

I am not sure that everyone knows about Apache. What is it?

Apache is a free Web server. The Apache Group (<http://www.apache.org>) was founded early

After the people at NCSA started working for Netscape, NCSA stopped doing Web server and Mosaic development. The people in the Apache Group had all been doing some development on the NCSA server and thought that the Internet community could not rely on NCSA to provide a free Web server to the Internet public. So, the Apache Group took the NCSA server and modified it, turning it into Apache.

Since then, the core has been completely rewritten and quickly, within less than a year, it became the number one server on the Internet.

Apache runs every UNIX you can imagine—even some UNIXes that you cannot imagine—and there is currently an NT port in development. Currently, Apache and Apache-based Web servers run on a little over 50% of the domains on the Internet.

What is your relationship to the Apache Group?

I started using Apache at Community Connection as its Web server and realized what a great Web server it was. When I decided that Apache needed some encryption capabilities, I got involved in the Apache Group.

At first I just wanted to make encryption part of the Apache core. But because of patent licensing, trade secrets licensing, partner relationships you have to get into, and export control laws, it was not really possible for Apache itself to have encryption built in. Once I realized that we couldn't add it directly to Apache, I said, "I need to make a commercial version of Apache so that people could use strong crypto with Apache."

You do all of your software development off-shore. Why?

The reason is because we want to sell software worldwide. We don't want to limit our sales to within the US and Canada.

When Stronghold originally came out, it was just myself. I had written most of the commercial bits. A number of people asked, "Can you sell me Stronghold? I'm in Germany." Because it is illegal to export strong cryptography from within the United States to outside North America, I couldn't sell them a version of Stronghold that was actually secure. I would have had to cripple it and make it insecure, then get an export license or order to sell it to these people.

Selling the customer a version of security is not something I want to do. I feel it is cheating the customer. Even though they know it is a crippled version, it gives people a false sense of security. If you have no encryption, you know you are not getting any security, but if you have

some encryption, you might think you have security when you really don't.

You moved off-shore because the US government is actively regulating encryption. What is the international environment for encryption like?

The US government has been trying to bully other countries into adopting similar restrictions so that what we are doing can't be done, but they are not having a very good time of it. The Clinton Administration had hired this guy named David Aaron to go to the OECD meetings about cryptography and try to bully all these other countries into doing what the US wants them to do. He has since either quit or been fired and that position is

On the Internet today, since cryptography is hardly used, any organized crime outfit or terrorist organization can rather easily break into banking systems and steal money from people's accounts.

unfilled. I think the US government has given up trying to bully other countries into adopting crypto restrictions.

Even if another country adopts crypto restrictions, it's extremely unlikely that they would do things as badly as the United States. For example, in France it is illegal to export cryptography without a license, which is actually a worse situation than in the US. However, a French citizen can write crypto in the UK, even if he can't use it when he goes back home.

If you are a US citizen, you are bound by US law even if you are outside the US. So, even though we do our development in the UK and Australia, we cannot hire US citizens or permanent residents.

Do you also have a domestic version of Stronghold or do you import copies?

We had to re-develop outside the States what was already developed inside the States. We do all of our development outside the States and then we import it to sell within the States.

Are other companies also doing crypto development off-shore?

Sun is doing off-shore development, but not quite the same way we are. They have a partnership with a Russian company so that they can sell strong crypto worldwide. But they are not using the same product inside the US. They have a separate product developed by this Russian company for outside the US and they use their own product within the US.

There are other companies doing strong crypto internationally, but they are not US-based companies doing development overseas. Data Fellows in Finland, Brokat in Germany, Baltimore in Ireland. I believe that we are the only company with subsidiaries overseas doing development for US and worldwide distribution.

How competitive is the market overseas?

In the Web server market we don't have significant overseas competition. But for our more crypto-specific products, the SafePassage line of products, there is more competition from these internationally-based companies.

SafePassage does what?

While Stronghold is a large product, providing a host of features, the SafePassage products focus just on crypto. They don't do very much else.

The SafePassage Web Proxy is an add-on product to any standard Web browser. For example, if you are in Germany using Netscape's browser, you can't connect to a Web site securely because your browser was crippled for export from the United States. With SafePassage Web Proxy, you would be able to talk to the server using full-strength crypto; your browser would talk to the Web Proxy and the Web Proxy would talk to the server. Because the browser talking to the Web Proxy is all within the PC, it doesn't matter if that is unsecured, but when Web Proxy is talking with the server, that link is secure because Web Proxy was developed outside the United States.

The SecureTunnel product is similar, except more abstract. It can be used for any TCP application. Let's say you have a database application that you wanted to make secure or you wanted to connect to your mail gateway securely. Just put SecureTunnel at both ends and it acts as a crypto proxy.

Web Proxy and SecureTunnel are not end-user products that people can just download

continued on page 123

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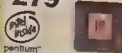
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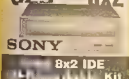


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and install if they want to use strong crypto. We sell to IS departments, corporations, and banks. **What are some of the things your customers are doing with these products?**

The state of Victoria, in Australia, is doing a project where residents access various government records through a Web browser. They have set up kiosks in shopping malls and you can download the software to your PC. Using standard Web browsers you connect to our Web Proxy product. Web Proxy is doing full-strength encryption to the Web server. The Web server is using Stronghold Crypto Engine product, which is sort of like Web Proxy for Web servers; it takes Microsoft Internet Information Server, Microsoft's Web server, and it adds full-strength cryptography. This gives the residents of Victoria the ability to talk to their government securely.

■ number of banks in Europe have bought SafePassage Web Proxy to give to their customers. Their customers use it to securely check their balance, transfer funds, and do all the kinds of things you want to do in a home-banking application.

C2Net has partnered with several companies that provide certificates. Why?

One partner is XCert Software. They do certificate authority and public key infrastructure management software. If you were deploying cryptography within an organization you need some way of certifying individuals, certifying Web ■■■■■, making sure everyone ■ who they say they ■■■■■. XCert develops and sells software to meet those needs.

We have also partnered with VeriSign and Thawte, but they just issue certificates and authenticate people.

There is a lot of certification and public key infrastructure issues in the crypto industry, which is why we partnered with ■■■■■ these PKI (Public Key Infrastructure) companies.

As the uses of crypto grows, it looks ■■■■■ though everyone will end up with having to keep track of a growing number of certificates issued by different businesses and Web sites. Will this ■■■■■ problems for individuals, for the end-user?

I don't think that having multiple certificates is really a problem. If you've ■■■■■ certificates that ■■■■■ all stored on your PC, they are ■■■■■ encrypted with ■■■■■ password. You only have to remember one thing.

However, if you've ■■■■■ ten different ■■■■■ on ten different Web sites, ■■■■■ have to remember ten passwords. If you ■■■■■ to have ■■■■■ remember ten passwords, more often than not,

you are going to pick the same password for all ten Web sites. That is incredibly insecure—you give your password to one Web site and that site ■■■■■ pretend they are you at another Web site. When all you are doing is reading the *New York Times* ■■■■■ the Web it doesn't matter, but when you are transferring thousands of dollars from one account to another account, it becomes more important.

If you have ten certificates, this is not really ■■■■■ problem. You will have ten certificates from ten different certificate authorities, and you use each certificate for different things. The Internet protocols are developed in such ■■■■■ way that it is most likely that you won't even have to worry about which certificate to present to which entities. That will be negotiated automatically by the computers.

There are a variety of issues discussed with crypto where the connections ■■■■■ not always obvious. For instance, freedom of speech. In early December (12/8/97), there was a Federal Appeals Court hearing ■■■■■ the Bernstein ■■■■■ regarding encryption and free speech. Can you help explain how these issues ■■■■■ linked?

There are a few free speech issues with respect to cryptography. One ■■■■■ that because of the export restrictions, US citizens are restricted in their ability to speak ■■■■■ the Internet ■■■■■ is a cryptography-related issue, but it is only a free speech issue because the US government decided to make ■■■■■ into an issue.

What sorts of things ■■■■■ restricted?

Basically two things. They restrict the publication of source code and they restrict the provision of technical assistance to foreign persons. So, if I was in the States and someone outside the States sent me email asking, "How do I do such-and-such crypto," I couldn't say, "Do such-and-such." That would be technical assistance in the development of an encryption item, and ■■■■■ illegal.

It's important ■■■■■ remember that the same speech current US policy seeks to restrict on the Net ■■■■■ protected speech in print.

Right. Even though many people believe that electronic speech is also protected speech, that hasn't yet been determined by the Supreme Court.

During the hearing, someone said, "It was perfectly legal for Dan Bernstein to publish 5,000 copies of his source code, on paper, and drop them over Baghdad. But it would not be perfectly legal for him ■■■■■ put it on a floppy ■■■■■ and ■■■■■ it to ■■■■■ colleague in Australia."

Yes, it is perfectly legal to speak on paper about cryptography, but it is ■■■■■ perfectly legal

to speak electronically on cryptography. **Could you give ■■■■■ brief synopsis of the Bernstein case?**

I have been going to all the hearings since '95. I have been bringing the whole company to the hearings too because it has been a lot of fun and the Appellate Court building is so beautiful.

Dan Bernstein wanted to publish a paper which included source code to cryptography ■■■■■ the Internet. So he applied for ■■■■■ license to do so with the Department of State and they denied that license. Then he got in touch with EFF and John Gilmore. They decided to sue [the government] because they felt it was a First Amendment issue.

In the Ninth Circuit District Court, Judge Marilyn Patel ruled that source code was speech, and therefore has the full protection of the First Amendment. Because it has full protection of the First Amendment the current crypto regulations were unconstitutional and therefore Dan Bernstein has the right to publish his cryptography on the Internet.

Two weeks after that ruling, the United States government removed the crypto regulations from the Department of State and inserted them in the Department of Commerce, making Judge Patel's ruling moot. Her ruling had to do with one set of regulations and those regulations did not apply anymore, now there were new sets of regulations. Even though the new sets of regulations were exactly the same, or 99% the same as the old regulations, Judge Patel's ruling—the Ninth Circuit District Court's ruling—did not apply anymore.

They had to have another hearing. And she reaffirmed the fact that, even though the regulations ■■■■■ now in the Department of Commerce, they are still unconstitutional, and therefore invalid, and therefore Bernstein has the right to publish crypto. Of course, the US government appealed that decision and [in December] there was an appellate hearing with three federal judges. (For more information, visit the EFF Web site at <http://www.eff.org>).

Professor Bernstein wanted to publish his paper ■■■■■ the Internet so his colleagues could discuss it. If cryptography becomes ubiquitous and all digital communications ■■■■■ encrypted, will that pose a threat to such things ■■■■■ mail lists and newsgroups where open, fairly spontaneous conversation is crucial?

If you are ■■■■■ a mailing list and you want ■■■■■ talk about things to a wide audience, you are not going to encrypt it ■■■■■ that only ■■■■■ few people ■■■■■ read it. You are going to make it publicly available, but you ■■■■■ going to make sure that it

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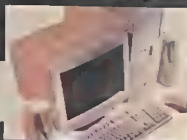
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is authenticated so that people know that you are the person who wrote it. Or that it's anonymous if you don't want anyone to know that you wrote it!—and securely anonymous so that it can't be traced.

The deployment of anonymous communications, I think, has great potential for making open communication a lot easier. If people have the ability to speak anonymously, they will be less worried about saying sensitive things that will come back to haunt them later.

The point of everything being encrypted is that everything is encrypted from point-to-point, one-to-one communications. If you have a one-to-many communication you wouldn't be encrypting that. The only thing you might be encrypting is the origin, not the actual content.

And for anonymity, in the physical world there are laws guaranteeing anonymity for distributing political leaflets, for instance. Are there parallel protections on the Net?

It is still relatively undefined. The current belief is that the right to speak anonymously will translate to the Internet if a case about anonymous speech on the Internet came up. This is based on various case law not related to anonymity, such as *Reno v. ACLU* (the CDA) and other Internet-related case law.

However, some people want to make anonymity on the Internet illegal. All of the laws proposed to ban spam also ban anonymous email. While I am a friend of spam, and would certainly want all the people who send spam to jail, I cannot support something that is going to ban anonymous speech on the Internet. I believe that anonymous speech is fundamental to free speech.

Do digital watermarks help verify the authenticity of a message?

Watermarks are a copyright issue, as opposed to a authentication issue. If I post something and want tons of people to read it, and I don't care about making money, then all I want is for the people who read it to verify it.

If I wanted to make money, and I wanted everyone who read it to pay a dollar, then I would have to have a watermark. So, for instance, if I gave you a document and you posted it on a Web page but I didn't see you post it on the Web, I could say, "This is from a copy I gave you" and sue you.

In the physical world, watermarks are often authentication issues. On currency, watermarks are used for authentication. On the Internet, watermarks are meant to be used for copyright protection.

So, digital signatures are used for authentication?

Right.

Do digital signatures also help ensure that a document has not been altered? Are these issues coupled or separate?

The authentication and the integrity of a document are pretty coupled. If I've got a document and wanted to sign it, I would take the document and do a hash, and sign the hash.

A hash is...

A hash is a mathematical function on the document, which is one-way. I could take the document and turn it into a hash, but then I

I think that when companies realize that there is this huge risk they are opening themselves to, they are going to force their customers to talk to them in a secure manner.

couldn't turn the hash into a document. And based on the hash and the document, I couldn't create another document which generated the same hash. Then the hash gets signed.

If the document is changed, when someone tried to verify it, they would do a hash of the document and would see that the hash of this other document is different from the hash that I had signed.

Is the control of personal information an encryption issue?

Controlling personal information is an extremely difficult task. I recently moved to a new house and I am trying to make sure that my address and my phone number are relatively restricted from public view. Before, when my business was home, I wasn't doing much to prevent my address from being public. Now

there is no reason for people to know my address. I have been trying to protect it and have realized how difficult a task it is.

Encryption does not make it a simple task, but it's a powerful tool to help people protect private information about themselves. I think that it's every individual's personal responsibility to protect their private information. I don't think that the government should pass laws saying that you can't ask someone for information and if they give it to you write it down. If I ask you for some personal information and you give it to me and I write it down and I give it to my friend or sell that information, you gave away that information—the first place Companies have the right to do with it what they will.

Not everyone agrees with that position.

Right, not everyone agrees with that, but I believe that everyone's personal responsibility to protect their own private information. And vendors and companies have an obligation to be up-front about what is going on. If I told you, "Give me your address, I am not going to tell anyone" and I tell the whole world by putting it up on my Web site, that's not right. But if I tell you, "Give me your address, and I'll send you junk mail, and you give me your address, there is no reason to be upset when you start getting junk mail."

At a conference I recently attended, someone made the comment that when browsers include certificates it will be easier for commercial Web sites to gather more personal information about who visits their sites.

If it is not implemented right it would be easier for commercial Web sites to gather more information from the certificates. However, it is possible to implement a certificate system where you don't put any personal information in the certificate. It doesn't have your name in it, but is still assigned to you. You could present that type of certificate to sites that want a certificate, but you would not be giving them any details about yourself. Web sites can actually get value out of that by having a persistent identity and being able to understand their customers a little better without having to understand specifics about specific people.

The Net also makes it easier to aggregate information and re-purpose it.

Right, on the Net it is easier to collect information and it makes it more difficult to protect personal information. But encryption makes it easier—no, it doesn't make it easier, it gives people more tools to protect personal information about themselves.

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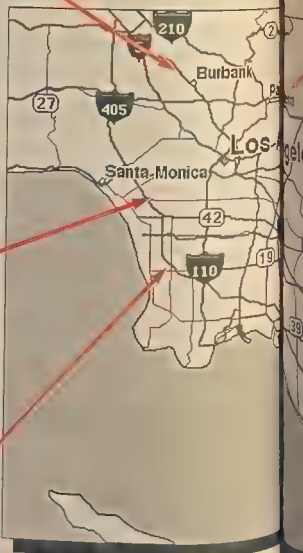
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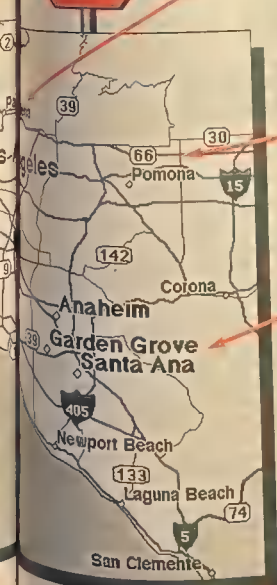
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CRYPTO WARS IN CONGRESS

NSA/FBI Push Key Escrow, Industry And Civil Libertarians Object Vigorously

By Ivars Bezdechi

As Washington lawmakers grapple with media-sexy subjects such as pornography on the Internet and other material considered in some circles to be "inappropriate," a heated debate on the ramifications of data encryption in a new world goes on behind the scenes, raising questions about free speech rights, privacy rights, freedom of information, and the interests of law enforcement national security.

The basis of the entire controversy is the Clinton Administration's proposed Security And Freedom through Encryption (SAFE) Act (sometimes referred to as the "key escrow," "key recovery" or "Clinton Clipper II") which also contains provisions that would export of encryption software technology to other countries. This law would force everyone who wants to encrypt a message electronic files on a server personal computer hard disk to hand copies of the key to outside entity company. If law enforcement agency on a local, state or government level is served with a warrant, the "key" to decode the would be

handed over by the third-party to the law enforcement agency. The rule would encompass Internet messages, financial and checking account records, word processing records, and the contents of any other computer files which would be of interest law enforcement agency doing an investigation. (The "escrow" part of the term refers to the escrow-like capacity of the entity—private otherwise—holding the encryption key.)

The chief proponents of the federal proposal, the Federal Bureau of Investigation (FBI) and National Security Agency (NSA) argue that they need the stringent "key-escrow" scheme to effectively manage investigations which might involve information stored data on computers as well as transmissions made over the Internet, just as they now possess the sophisticated technology needed to wiretap conventional phone conversations.

Although the proposed legislation also includes rulemaking which would broaden controls the export of encryption technology to other countries, the debate over SAFE and another called "Promotion of Commerce Online in the Digital Era" (or in short, "PRO-CODE"), has shifted from an effort to relax export controls, concentrated effort against the broad new domestic controls and mandatory government private communications.

The Trouble With Key Escrow

While government's position on the issue may be understandable one level, oppo-

nents to the measure leading the charge in questioning the integrity of the key escrow holders, who, in a sense, will end up guarding the chicken coop.

An undetected breach of security within the agency entrusted to keep the secret code could present a gigantic problem for every one of the key escrow agency's customers when such information falls into the hands of someone other than an authorized law enforcement agency. As a result of security breach, the agency would then have to contact every customer and then issue new keys (assuming that they have the integrity to admit their own shortcomings in allowing such a breach to happen). Once the breach was identified and dealt with, those customers would need to immediately start using the new keys and then re-encrypt every document that used the old key.

Computer industry experts predict that the sheer financial cost of President Clinton's proposal will be astronomical, and that most agencies and companies will operate around limited liability guarantees; and that in of a security breach, the policy will them to be used up in endless court cases.

Counter-Escrow Arguments

The Washington, DC-based Center for Democracy and Technology (CDT) (www.cdt.org) has offered a "my lock, my key" approach, which is considered to be more reasonable and functional overall.

In tandem with CDT's lobbying efforts, a

group of leading cryptographers and computer scientists released a report last May which examined the risks and implications of government-designed key escrow systems (www.bsa.org). The report, in part, cautions that, "the deployment of general key-recovery-based encryption infrastructure to meet law enforcement's stated requirements will result in substantial sacrifices in security and cost to the end user. Building a secure infrastructure of the breathtaking scale and complexity demanded by these requirements is far beyond the experience and current competency of the field."

In simple language, says Jim Dempsey, senior staff counsel for the CDT, these pieces of legislation are attempting to build something that can't be built. He says, "If you build it, or try to build it, you're going to make a mistake. The

The "Security And Freedom Through Encryption" bill would force everyone who wants to encrypt a message or electronic files to hand over copies of the key to an outside entity or company.

scheme they are trying to build will be too vulnerable. Trying to control all of these keys, and trying to keep track of all of these keys, and to do it without making mistakes, is simply not possible."

He says that the key escrow proposal offered by the Clinton Administration and the FBI is a profoundly vulnerable system. Individuals who use the Internet (whether for banking, commerce, relationships, or maybe in the future, "tele-medicine" by consulting with doctors over the Internet) are probably not aware that all of those transactions without strong encryption are "insecure" or can be easily intercepted by a third party.

"The key recovery [escrow] proposal offered by the administration is another window of vulnerability that will seriously affect the individual," Dempsey says. "The Internet as it stands now is very insecure. Its openness and networked nature makes it insecure. The only way to make it

secure is through good security, brought forth with encryption which is easy to use, and as one person has said, 'double-click easy'."

"Right now, encryption in the voice communication world is most important with respect to wireless telephones, of which there are about 40-50 million customers," he adds. "The wireless telephone is an increasingly popular and seamless component of our telephone system. The security of wireless communications is very important. Encryption is central to any security program."

Balancing Act

Dempsey and the CDT clearly are not advocating a world where encryption and data protection and the interests of law enforcement cannot coexist. They simply want a policy that is technologically workable and protects free speech rights—which includes no government-sponsored domestic controls and substantial reform of laws governing the export of encryption technology outside of the United States.

Currently, strong and virtually unbreakable encryption schemes are widely available overseas, but US companies are expressly prohibited from exporting strong encryption products.

"This has had the effect of inhibiting the spread of encryption internationally and domestically, and that has left the Internet and other communications infrastructures vulnerable. We believe that law enforcement will have many avenues available to it, even in a world of widespread encryption," Dempsey says. "Law enforcement will not be crippled by the widespread use of encryption, and in fact, the widespread use of encryption will prevent crime."

The Drags On...

Groups such as the CDT, the Internet Privacy Coalition, Electronic Frontier Foundation and Voters Telecommunication Watch have been successful in thwarting some of the most egregious "Big Brother" provisions of government-sponsored encryption legislation.

However, Dempsey is not ready to claim victory. He described these different proposals and counter-proposals and amendments as being in "perilous gridlock."

"We've never had controls domestically on encryption technology. But the FBI's proposal would be devastating to the future of the Internet," he says.

Dempsey attributes the administration's and government law enforcement's "Big Brother" approach to "the fear of having to do things in a different way."

"The FBI is trying to fight the technology rather than use the technology to benefit," he

argues. "In a technological environment which is characterized by decentralization and user control, the FBI is trying to impose centralized decisions and centralized structures on the user of controls—in this case, by depriving the user of the control and use of his or her keys."

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Online Resources:

Center for Democracy and Technology

URL: <http://www.cdt.org/>

The Center for Democracy and Technology, a non-profit public interest organization based in Washington, DC, works to develop and advocate public policies that advance constitutional civil liberties and democratic values in new computer and communications technologies. Its Web page includes more information about pending encryption legislation at <http://www.cdt.org/cryptol>.

Internet Privacy Coalition

URL: <http://www.privacy.org/>

The mission of the Internet Privacy Coalition is to promote privacy and security on the Internet through widespread public availability of strong encryption and the relaxation of export controls on cryptography.

Encryption Policy Resource Page

URL: <http://www.crypto.com/>

The Encryption Policy Resource Pages is an issues-oriented place on the Web for information about the United States' encryption export restrictions. The Web site also maintains an "adopt a legislator" email program at <http://www.crypto.com/member> for concerned netizens.

Voter's Telecommunications Watch

URL: <http://www.vtw.org/>

The Voters Telecommunications Watch (VTW) is a New York-based citizen-based Internet civil liberties group. It organizes individual Congressional districts, lobbies state and federal legislation, and occasionally raises money for a worthy cause or issue.

Rep. Goodlatte's Encryption Page

URL: <http://www.house.gov/goodlatte/encryption.htm>

Latest news on pending encryption legislation from Rep. Bob Goodlatte (R-VA).

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Encryption, Privacy, And Your Macintosh

Two Views Of PGP

In our column this month, Sam will start off with some cautionary advice about encryption of data; then I'll talk about why I feel **■** strongly that everyone should encrypt just about everything, and give some brief instructions on how to get, install, and use PGP for the Mac.

—Peter

Playing With Guns

By Sam Penrose

The US government defines strong encryption software as a "munition" and threatens to jail those who export it for threatening the national security. Computer pundits see strong encryption software as a tool for preserving the liberties that make America worth fighting for.

I tend to agree with the pundits' arguments against regulation, but some preliminary research on cryptography suggests that they may have something to learn from the government as well.

O'Reilly and Associates has **■** book out on the leading personal cryptography product: *Pretty Good Privacy* by Simon Garfinkel. Its sections **■** cryptographic theory and history **■** wonderfully clear. I originally planned **■** review PGP (the book) for this column, but Garfinkel hasn't updated it in three years.

PGP doubles as a manual, which **■** great if you want to **■** v2.6 for DOS or UNIX. The software **■** passed release 5.0. If **■** you want is background and you don't **■** paying \$30 **■** leafing through pages **■** outdated software tips, Garfinkel's PGP is **■** great book.

If there is a book **■** PGP written since 1995, I can't **■** it. For breaking information on PGP, check the *comp.security.pgp* **■** *alt.security.pgp* newsgroups, **■** visit the links page **■** on the end **■** this piece. There **■**

five "current" versions of the program, **■** be prepared to do some research. Rather than add to the chorus of praise for PGP, this piece will look **■** some problems with the technology as explained **■** Garfinkel's book.

Be Careful What You Ask For

The first problem with strong cryptography is that it works. Once you've encrypted a file with PGP or another standard of equivalent robustness, it can only be recovered with the proper key. Lose the key or the key's pass phrase (what you type to access the key), and you have lost the file. Keep a copy of the file or your passphrase lying around, and your "strong" cryptography becomes not so strong, making the exercise somewhat pointless.

Verify, **■** Don't Trust

Concealing your key doesn't have to be a problem if you only want to secure a file while it's **■** transit. For that situation, the preferred method is "public key" cryptography. A public key is a very large number mathematically related to another very large number, the corresponding "private key" **■** such a way that the private key **■** very hard **■** identify if all you have is the public key. This relationship allows the wide distribution of a public key for encrypting files that can only be decrypted by the holder of the private key. Thus I can post my public key on my Web page and you can use **■** to send me a file that can't be read even by others who have visited my page unless they break the underlying cryptography or have access to phenomenal computing power.

Public key cryptography has its own inherent problem. You turn to cryptography because you don't trust someone: your coworkers who might snoop **■** your hard drive **■** the general Internet population who might read your email. Ironically, every use of public key cryptography is inherently an act of trust. To **■** encrypt a file with a public key is to say that you trust that the public key belongs to a specific person. (It may also say that you trust that person to handle the file and their own private key) appropriately, another iteration of the first problem inherent in **■** strong cryptography.) If your best friend hands you a floppy disk saying "here's my public key," the need for trust may not seem like such a big deal. But how many people do you know that well?

continued on page 145



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There is a partial workaround to this problem, the Web of Trust, which relies on the fact that public key cryptography can be used to authenticate messages as well as encrypt them. Via another mathematical function, I can use my private key to "sign" a message in such a way that anyone with my public key can verify that it came from someone with access to the private key for that public key and that it hasn't been tampered with in the interim. By signing someone else's public key, I verify for anyone who trusts my public key. As a consequence, you can

mistake that public key cryptography can't prevent. For that reason, its effective use requires constant vigilance.

No Such Thing As An Unloaded Gun

The underlying problem with strong cryptography programs is like the underlying problem with guns: they are powerful tools, but only those with training and discipline can use them safely and effectively. The government's decision to call strong cryptography "munitions" may be a way of enforcing a bad policy. The analysts who oppose restrictions on cryptography may be fighting the good fight. But too many of them portray PGP and similar software as utilities for accessorizing your computer, with the civil liberties angle thrown in for cachet. These are serious programs whose use and misuse entail serious consequences. Want to play around with them? Don't forget that you are playing with guns.

PGP: Get It, Use It

By Peter Linde

I am going to take a pretty strong stance about PGP. Everyone should get it. And everyone should use it. Not just on your truly important or confidential mail and documents, but on everything you send in transfer to another computer, as well as personal or confidential documents that you keep on your own hard drive.

I don't believe in strong encryption (without government key recovery, by the way) because of the semi-wacky arguments that it provides the last and best defense against a police state. I believe in it for one simple reason: privacy.

I'll give you a few examples of what I mean. Example #1: I once heard a computer consultant joke, "You can hide it from your priest. You can hide it from your therapist. But you can't hide it from your computer consultant." I knew exactly what he meant. At my consulting company, we are regularly called upon to recover our client's data from their crashed hard drives. We use standard tools available to anyone. At minimum, those tools display to the person performing the recovery the name of every file on a hard drive. In worst case crashes, we occasionally must look inside the files to make sure that we are recovering the data.

You wouldn't believe what I have seen. Maybe you would. Go look at your own hard drive and imagine that your boss or some stranger had free access to everything on it. See anything you might like to hide?

Example #2: Someone walked into the fourth-floor office of a vice-president of one of our large clients and walked out with his PowerBook. That PowerBook had on it the details of a billion-dollar merger that the VP was in the process of negotiating. Fortunately, the data was backed up, but one is left to wonder if this was a random theft or an act of industrial espionage.

Example #3: That email you just sent. You may think of it as a private conversation between you and the recipient, but in fact, many people can read every word you wrote as it travels from your machine to the machine of the person to whom it is addressed.

First off, if your computer is on a network, anyone with a simple packet analyzer (they are available for free on the Web) can read everything as your post travels from your machine to your mail server. Once your post makes it to your mail server, anyone with physical access to that server can read your mail. They may even be able to set up the server such that it automatically forwards a copy of any mail addressed to you to their own account. In fact, most corporations reserve the right to view the contents of email sent or received by their employees.

Computers and email make our lives so much more convenient, yet the nature of digital storage and transfer of information is the very problem. As any software vendor can tell you, it's just too easy to make copies. Each leap in information technology, from monks copying manuscripts by hand to modern computers, has allowed for information to be copied more quickly, more accurately and more efficiently.

There has probably never before been a method of communication and data storage that people believed to be so secure, and yet was so easily breached as computer disks and email systems.

Many people believe that sending an email is like sending a letter or even making a phone call. They have come to count on these systems of communication to be private. Of course, all can be breached. But none as easily as computer-based systems. For example, before the government can listen in on your phone calls, they need to go through a significant legal process. They then have access to equipment and methods that the average citizen just doesn't have. I am not saying that others can't tap your phone, but there are major technological hurdles in the way of doing so.

Someone walked into the fourth-floor office of a vice-president of one of our large clients and walked out with his PowerBook. That PowerBook had on it the details of a billion-dollar merger that the VP was in the process of negotiating.

expand your "Web of Trust" as far as your friends' signatures will take it. What you can't do is to expand it as far as your friends' acquaintances' signatures will take you. If you see a friend's signature as a stranger's public key, your friend is certifying the stranger's identity (in practice, their name and email address), not their trustworthiness for verifying the keys of other strangers or any other purpose.

can be a subtle distinction, I recently learned to my regret. I vouched for an email acquaintance named "Smith" to another email acquaintance who wanted to buy a computer. There actually two Smiths, Smith and Smith Jr., and neither I nor the buyer remembers whether he specified one of them. At any rate, the one I trusted was Smith, and the vendor was Smith Jr. Maybe the query was ambiguous or maybe I just blew it, but the upshot is that Smith Jr. turned out to be a rip-off artist. Public key cryptography might have helped with the confusion between Smith Jr., but I would have vouched for Smith Jr., the basis of knowing his father anyway. I confused identity with trustworthiness, which

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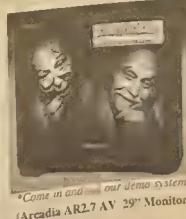
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On the other hand, practically anyone with a computer, a modem, and a keen enough interest could swipe your data or intercept your email. And even someone without any of those can see everything ■■■ your hard drive if they just steal your computer. It happens all the time.

So, should you be encrypting your personal mail and files? Assuming you answered yes, read on to find out where to get PGP for the Mac and how to install and use it.

Using PGP

To get PGP, simply point your browser to (<http://www.pgp.com:8001/freeware/PGPfree.htm#553.hqx>). There you will have to fill out a form declaring that you are ■■■ the US and promising not to forward the program to anyone outside the US.

Once the installer is downloaded on to your hard drive, double-click on it. Carefully read all the terms of use and the ReadMe (just kidding!) and then install the software.

Restart your computer. You will find a PGP 5.5 folder ■■■ your hard drive. In addition, the installer will also place ■■■ few extensions in your system folder. If you use Emailer or Eudora, you will find that you can now encrypt and decrypt files from within these programs. PGP is better integrated with Emailer, but works just fine with both products.

Using the PGPkeys application, you can instruct PGP to place an icon in the menu bar of

specific programs so that you can access PGP encryption from any program you choose.

Encrypting, decrypting, and signing with PGP are pretty straightforward. Understanding how it all works can be a little tricky. PGP 5.5.3 comes with ■■■ manual ■■■ PDF format, but even better (than that, it now supports AppleGuide. Take few minutes and read through the AppleGuide files. It is well worth the effort.

Once you are ready, create a key for yourself. All of PGP's functions are available through the PGPkeys program. You might also want to take a minute or two to check out the various preferences available under the Edit pulldown menu. I strongly recommend that you check the box that says, "Always encrypt to default key." The default key is the one that you create for yourself. This will allow you to always decrypt any mail that you send to anyone. Remember, you encrypt email with the public key of the intended recipient(s). Anyone whose public key is not included at the time of encryption (including you!) will not be able to decrypt an encrypted message.

Never tell anyone your private key. This is the only protection you have in the world of encryption. And considering that PGP allows you to digitally sign email (proving that it came from you and has not been altered since you ■■■ it), it is important that you never share your private key with anyone.

But how do you get other people's keys? Easy—they can mail them to you ■■■ text. Simply

drag your key from the PGPkeys window into any application that supports drag and drop. Or, you can use your PGPkeys application to do a search on a Key Server. You can search by name or email address. Feel free to get my key by searching on the Key Server for "pbl@lindegroup.com". I will happily reply to any encrypted email with ■■■ encrypted response. Make sure you send your key to the Key Server. Without it, I won't be able to reply in an encrypted form.

PGP is so well-designed that it is easy and actually fun to encrypt and decrypt messages. Give it a try. Protect your privacy. ■
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RESOURCES:

PGP: Pretty Good Privacy

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INTERNET • BY JOHN H. QUARTERMAN

Is The Internet A Commons?

Second Of Two Parts

Finally to the question: Is the Internet a commons?

The most basic characteristic of a commons is that it is of fixed size, and, therefore, exhaustible. It is a field of grass, or a mine of copper, or some other natural resource in the traditional economic or Marxist sense.

The Internet has been doubling in size every year since 1988. That's approximately 100% growth every year for nine years. Compare that to current worldwide human population growth of about 1.4% per year. If the Internet is a commons, it surely should be barreling head-on into a tragedy.

This point is important. Many people see "100% growth rate" and think of absurd sales projections they have seen in advertisements. But this 100% growth is not a projection. It is based on solid historical figures, collected systematically over years. It is not. We quibble about whether it's 100% or 120%, and certainly it differs from country to country. But overall the historical Internet growth rate (<http://www.minds.org/internet/growth/>) has been approximately 100% worldwide since 1988. Not 5%, not 10%, not 120%. This is a growth rate unmatched by any other technological mechanism in the history of the world. As far as I am aware (I am actively searching for similar systems, and I solicit examples),

Broadcast radio or TV could be considered a commons, because they use limited numbers of channels. But the Internet does not have channels in this sense. It is true that Internet Protocol (IP) addresses are limited, consisting as they do of only 32 bits. However, a technical solution has been specified and standardized for years, with usable implementations. That solution, called IP version 6 (IPv6) or IP Next Generation (IPNG), is not yet widely deployed because so far it hasn't been needed, even though the Internet has been

unlimited number of companies or other organizations can use the same such IP address simultaneously, with all effects whatever on any of those organizations or on the Internet. No matter how many organizations use the same IP address for that purpose, they can never use it up, no more than they can use up the number nine.

Here we have a basic difference between the Internet and Hardin's commons. Some of the most basic Internet resources are inexhaustible.

Not because ongoing technical fixes are required to keep increasing the amount of resource available, but because they really are inexhaustible. In the same sense as the number nine or the word yes.

Other Internet resources can be exhausted, at least in the near term. If every Internet user right now decided to reload a Web page all at the same time, many Internet links would be saturated, all their bandwidth would be used up. But this is

still not like Hardin's commons. A few moments later, all that bandwidth is free again: as if the grass sprang back up as soon as the cows stopped eating.

Nonetheless, the total number of Internet users is rapidly increasing, and thus they use more bandwidth. Will all the Internet's bandwidth be used up, like grass grazed to exhaustion? No.

Why do people want to regulate the Internet? Because, many say, it's a commons, and if use of it is not regulated, access will be inequitable, and those who do have access will destroy it by overuse, like cows overgrazing a field of grass. This opinion has appeared in print in very respectable places.

doubling in size every year since 1988. It hasn't been needed partly because of conservation, in that IP addresses are allocated in a much more efficient manner these days than they were when IPNG was being designed.

Perhaps more relevant is recycling. The average intranet (internal corporate internet) these days has one of a small number of IP network addresses reserved for that purpose. An

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Online Guide

Internet continued

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link doesn't produce the kind of wear that happens when you roll a wheel or use some other mechanical machine, nor the kind of consumption that happens when you eat a plant.

Using the Internet makes it grow. Each new user comes with a batch of money that that user

pays to an ISP (or perhaps pays more indirectly **■** the case of universities). That ISP uses the money it receives from its users to add more modems, routers, and external bandwidth. It also uses the new money and users to attract more capital from banks, private investors, and the stock market.

There are of course secondary costs, in that Internet links require computers and metal or fiber optic communications links, which require mining, manufacturing, distribution, etc. But the total physical and economic resources required to support the current Internet, or for that matter **■** future Internet large enough for every person on the planet to be a user, are small compared to, for example, the resources already being used to feed all the people on the planet.

I could be wrong about that. If someone seriously wants to argue that the Internet is **■** commons in some sense (rather than simply baldly asserting that it is without any supporting arguments or evidence), secondary costs would be a good place to start. Bandwidth **■** not a good place to start, because bandwidth simply is not analogous to grass.

Furthermore, the resources used to actually transfer information through the Internet are certainly less than for almost any other communications medium. You don't have to chop down trees to make more bits.

The Internet is not a commons. Pretending it is would only lead to bad political and economic decisions. Let's see the Internet for what it is: a communications mechanism, of a new kind, without many of the restrictions that apply to previous communications mechanisms such as books, magazines, radio, and television, and **■** comparable to a field of grass.

Political Implications

Economics always has political implications and Hardin is well aware of that. He asserts "Freedom in a commons brings ruin to all." That may or may not be so, we will **■** argue it here.

But freedom on the Internet brings growth of the Internet; both in number of users, nodes, and links, and in the information available on it and in the organization of that information.

Viewing the Internet **■** a commons leads to **■** commendations of volume charging **■** limit bandwidth usage (that is precisely what Science recommends). But with limited bandwidth usage only three years ago we would not



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have seen the explosive growth in usage of the World Wide Web (WWW) that did occur. WWW is exactly the application that attracted so many new users to the Internet that there are now approximately eight times as many people using it as there were in 1994. (Not 8%; eight times, or 800%.) Few people would have been willing to use the Web if they had been required to incur hefty costs each time they transferred a large graphic. If there had been charges for short-term volume usage before that, we would not have had Gopher (the predecessor of WWW), anonymous FTP (the long-standing mainstay for transfer of large files), or for that matter electronic mail (the most basic Internet application).

Short-term volume charging is short-sighted, and omits the long view that liberal use of bandwidth is exactly what has led to the growth of the Internet.

Similarly, viewing the Internet as a commons leads to the view that content distributed over

the Internet must be regulated — that good content will not be inundated with bad. But the Internet does not have limited channels like radio or TV. Content regulation for that reason is not valid. Content regulation by Internet carriers for the protection of minors is also not valid. Such protection belongs on the receiving end, as we and many others, including the US Supreme Court, have discussed at length (<http://www.mids.org/mni/707/cda.html>). As the Supreme Court justices put it: "the Internet is 'a unique and wholly new medium of worldwide human communication.'"

This does not mean that there is — need for

restraints on bandwidth usage. However, such restraints already exist, in the form of volume charging of larger granularity, such as hourly usage charges and monthly aggregate bandwidth usage charges.

More importantly, they exist in the form of technical mechanisms such as the Van Jacobson TCP slow-start algorithm. In Hardin's day, the only way to "legislate temperance," as he put it, was to appoint bureaucracies of people to make case-by-case decisions. In our day, we can write computer programs to implement algorithms for technical temperance decisions. Now it is well known in the Internet technical commu-

No one would be foolish enough to say the Internet ended the Cold War and thus improved national security in a nuclear world, yet it did have a role in that historical process.

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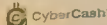
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ty that Jacobson slow-start was designed before the popularity of the Web, and that it doesn't deal as well as we might like with the Web's propensity for lots of brief TCP connections. But tuning that algorithm makes a lot more sense than appointing bandwidth bureaucracies for the Internet. Internet bandwidth usage really is a technical and economic problem, not a political one.

There are also pathological cases. Spammers abuse the electronic mail mechanisms of the Internet to steal resources from others by sending huge amounts of bulk mail for as little as anyone but themselves. We should stop them for the same reasons that we should stop bank robbers. Whether we should stop them by the same means that we stop bank robbers is a different discussion that I have already treated in several columns. But spammers are clearly a small minority of Internet users; if they weren't, nobody would be able to use electronic mail for any useful purpose. There is no point in extrapolating from spammers to the Internet population at large.

As we have already seen (in the cases of the Soviet coup and the Tiananmen Square massacre), the Internet promotes freedom. Restricting the free flow of information on the Internet would be bad for the Internet and bad for the world at large.

The Internet is not a commons. Freedom may or may not be good for a commons. Freedom is good for the Internet.

The total physical and economic resources required to support the current Internet, or for that matter a future Internet large enough for every person on the planet to be a user, are small compared to, for example, the resources already being used to feed all the people on the planet.

The Internet And Wealth

Internet deployment in Internet hosts per capita correlates very strongly with personal income per country (see MMQ 401 at <http://www.mids.org/mmqa401/>). We don't yet know whether this is simply because rich countries can afford more Internet, or, as also seems likely, the Internet promotes economic growth. If the latter is true, consider also that wealth is one of the few things that appears to lead to reduced population growth.

Hordin asserted that "there is no prosperous population in the world today that has, and has had for some time a growth rate of zero." When he wrote that, it was true. But things have changed. According to the CIA World Factbook for 1996, Finland, which is a prosperous country by anyone's measure—not to mention the country with the most Internet hosts per capita in the world—has a 0.1% pop-



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ulation growth rate. Even Italy has only a 0.13% growth rate. Those are not zero, but close to it. According to the US Census Bureau's *World Population Profile: 1996*, the populations of Germany and Spain, as well as thirteen other countries that were in the former Soviet sphere, are actually declining, that is, less than zero. Even the aggregate worldwide population growth rate was only 1.4% in 1996, according to the Census Bureau—the lowest rate in more than 50 years. Today's world is not exactly the world Hardin was describing, which is not sur-

prising, 30 years later. Neither Hardin nor Malthus claimed to predict numerically accurate characteristics of the world 30 or 300 years in the future, although it would have been better for their theories if they could have done so.

More importantly for the Internet, there is a clear correlation between human population growth rate and wealth (usually less than 1% annual population growth) and poverty (usually more than 1%).

So if it is true that the Internet promotes economic growth, and if it is true that econom-

ic growth leads to lessened population growth, then it would be short-sighted indeed to throttle the Internet, since the Internet could well be contributing to an eventual solution to any impending Malthusian crisis.

Conclusion

Cattle may need culling. Internet users do not.

Freedom may be bad for a commons. Freedom is good for the Internet.

The Internet is not a commons. Let's not treat it as one.

Acknowledgment

This column is dedicated to Dr. Elsie Quarterman, professor emeritus of plant ecology, Vanderbilt University. Any errors in this column are the sole responsibility of the author. ■
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Modem Wars A Side Issue

Telcos And Cablecos Call the Real Shots

High-speed modems. Cool. Just remember you need a phone line or licensed frequency on which to transmit your data.

That said, consumers can now breathe a short sigh of relief as the smoke clears from the most recent intergalactic war over 56K modem standards.

These 56K, cable, and DSL modem wars are quick make-a-buck, three-card monte schemes to squeeze every last dime out of decades-old technology and antiquated telco pricing schemes. The real action is run by the telcos, and to a lesser extent the cable companies.

**Not Rockwell.
Not 3Com. Not
Microsoft. Not yet.**

As reported earlier (<http://www.microtimes.com/163/online.html>), over the past year two competing standards for high-speed modems were touted by rival camps in U.S. Robotics' (x2) and Rockwell's (K56flex) technologies. These competing technologies enabled modems using a pair of regular telephone lines to, in some cases, achieve upwards of 56Kbps downloads

and somewhere between 33-40Kbps uploads, depending on the weather and the state of your internal wiring.

Since the introduction of these two standards, each camp—with 3Com swallowing U.S. Robotics in the meantime—claimed that its standard was being implemented faster and by more important people than the other. This war of words was heightened by the fact that a modem built on one standard couldn't talk to a modem built on the other technology.

Despite claims from both camps that buyers would get a free upgrade to some future joint standard, consumers got caught holding the bag of trying to figure out which modem to buy according to which Internet Service Provider (ISP) or online service they used. Pity the technologically Amish who mistakenly chose x2 modems only to change their ISP two months later (not uncommon) only to learn that new ISP supported K56flex technology.

Faced with this Damoclean sword, consumers did the only rational thing. They stopped buying 56K modems in droves. This forced the major players to finally get together in Orlando, FL, at the beginning of December to hammer out a consensus that will produce one ITU standard to be voted on in January and then ratified by September, 1998.

Even in their respective press announcements touting their support for the new consensus, both camps continue skirmishing as if they hadn't heard the armistice had been signed. As we noted last time, these guys do have fun with numbers that goes way beyond apples and oranges. For instance, Brand X claims its modem technology had been adopted and deployed by more than "1,200 ISPs worldwide, offered by one out of the top 10 ISPs, 100 ISPs,

Europe, 30 Latin American ISPs, and 70 ISPs in Asia and the Pacific." Meanwhile Brand Y claims it is the most widely supported 56Kbps technology, "deployed by more than 1,000 ISPs at 6,000 points of presence in 4,000 cities and more than 30 countries worldwide." Can you tell which is which?

What do I care? Just give me something that will work with everything else. I suppose these gadgets will be available sometime late in '99 as modem manufacturers will offer new "standards-based" modems and upgrades based on the now "determined" standard prior to its actual ratification in September. So you can look forward to another round of "We did it first!" before the whole thing is over.

Then it's on to the been-there done-that next thing.

Cable Wars

Which, in this case, is a new round of frothing PR claims between cable and xDSL modems. Luckily for you, both 3Com and Rockwell are determined to be big-time players in these markets—well, with hopes that they confuse the bejesus out of consumers once more, getting you to worry over which next high-speed gizmo really is the next step.

High-speed cable modems to be a little ahead of the curve when it comes to future standards, both 3Com and Rockwell have already announced their respective intentions to follow the budding standard set by the Multimedia Network Systems (MCNS) partners—i.e. "large cable companies." The new standard is "data over cable service interface specification" or DOCSIS.

3Com's initial bid to support DOCSIS is a line of cable modems that allow a cable operator's

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plant to send data to a home or business at up to 38Mbps. Data can also be sent "upstream" from the consumer to the cable plant at a whopping 33.6Kbps, using either your own or 3Com's x2 modem equipped with telephone connectivity.

Rockwell, meanwhile, claims it will be the first to field complete chipsets for both sides of the cable connection for subscribers like you and companies like your favorite cable company, TCI. According to Rockwell sources, MCNS-DOCSIS-compliant cable modems will enable Internet connections at typical rates of 3Mbps downstream and 1Mbps upstream, with peak rates approaching 36Mbps downstream and 10Mbps upstream. Look for these puppies to show up late in '98.

DSL Wars

Meanwhile, both 3Com and Rockwell are heavily invested in the DSL market that promises high-speed bandwidth over the copper telephone lines that already exist in your home or at your business. Among its other DSL efforts, 3Com, via its purchase of U.S. Robotics, lays claim to have some sort of DSL-style technology to be built into the x2 V. Everything modems available by summer of '98.

On the other hand, Rockwell and its ally Nortel plan to foist their own low-cost DSL standard on an unsuspecting populace. Rockwell recently announced it will build modem chipsets based on its consumer-oriented DSL (CDSL) technology to interoperate with Nortel's 1MB modem technology telephone network equipment. According to Rockwell's PR, this flavor of DSL "requires no rewiring at the telco's Central Office and no subscriber service call ■ install ■ POTS (plain old telephone service) 'splitter' or rewire the home. It is compatible with current POTS voice features and extension phones in the home or business. And the service is extremely tolerant of phone-line length and condition, compatible with the vast majority of all non-loaded telephone lines."

And "non-loaded telephone lines" brings us back full circle. By now we should've figured out that these 56K, cable and DSL modem wars are quick make-a-buck, three-card monte schemes to squeeze every last dime out of decades-old technology and antiquated telco pricing schemes. The real action is run by the telcos, and to a lesser extent the cable companies. Not Rockwell, Not 3Com. Not Microsoft. Not yet.

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Online Services continued

Case in point. "compatible with the vast majority of all non-loaded telephone lines." Misdirection is the center piece of every classic con.

Find a non-loaded line. Ask a PacBell sales rep if you can get service for one. Despite their blank response, in fact, there are mega Gigatons of the stuff already deployed. But don't bet on the local "public trust" telephone utility having a clue as to where one line starts and ends after all of these years (a suspicion once hazily forwarded to me by Jack Rickard, fine cigar and cabinet aficionado and Editor Rotundus of *Boardwatch Magazine*).

Better yet, even if you found a non-loaded line, see if PacBell or some other RBOC will let you employ one without Ma Bell getting a cut just for it being there, unused, after 20-odd years as an alarm circuit. In a non-competitive market, that's how telephone companies make their money. Despite a California PUC tariff, wasn't it last year Pacific Bell put a moratorium on alarm circuits for use as data lines? I recall safety and data integrity concerns being hastily mentioned as a ruse to confound the PUC into forbidding wild bands of independent telcos, ILECS, CLECS, ISPs and hordes of unwashed bandwidth-starved consumers from taking advantage of T-1 data rates at ISDN prices.

The point is that one hears all of this blather about this or that DSL working on regular phone lines without taking into account who owns it. First, most active telephone lines are loaded. More importantly, the Bells own it and call the shots. Same for cable companies.

Meet The New Boss, Same As The Old Boss

So now we find PacBell's FastTrack DSL service is available in selected areas of Northern California. Now you may have DSL transmission in California—because PacBell says you can. And so, DNAI, a California-based ISP, and eventually other on-the-bounce ISPs offer high-speed IP service in those areas as well.

Modern standards? Child's play. Just don't forget how the real game is played. You pay \$80 per month to DNAI for the "IP service" for 384Kbps

symmetric service. After an introductory period you might have to pay for or lease some DSL modem from 3Com, Hayes, or whoever; minor issue what modem or standard you buy. Doesn't matter.

Because the real catch is you also get to pay \$125 per month to PacBell for use of a phone line. Why wasn't DSL available in California last year? PacBell needed time to figure out how to bill \$125 per month for an unmetered line instead of \$12.95. Now that's a business.

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RESOURCES:

3Com/U.S. Robotics

URL: <http://www.3com.com>

Rockwell

URL: <http://www.rockwell.com>

Nortel

URL: <http://www.nortel.com>

Boardwatch Magazine

URL: <http://www.boardwatch.com>

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BY KEVIN M. SAVETZ

Web Cookies

Harmless Convenience, Or Insidious Invasions Of Privacy?

Your Web browser is keeping notes about you. Don't fret, it's not as bad as it sounds. After all, how can something with an innocuous name like "cookies" be bad?

A cookie is simply a note to itself that a Web site leaves on your computer's hard drive. You know how your applications—Microsoft Word, Netscape, and other programs that you use—create preferences files? Cookies are preferences files for Web sites.

Any information that you give to a site can be stored in a cookie, so that next time you visit that site (later that day or even months in the future) the site can read its cookie and remember your preferences. For instance, if you tell the site that you prefer to see the "frames" version of Web pages and that you use Windows NT, the site can stash that data in a cookie. The next time around, it will use frames and tell you about new Windows NT software.

Or you might click your way to the classical area of an online music store using cookies; the store duly notes your penchant for Pachelbel, and on your next visit the site highlights classical releases. Unless you have told your browser to warn you when cookies are added, you probably won't even realize the process has occurred.

Cookies can only store information that you give to the Web. This includes the basics like what parts of the site you visit. But a site can't get your email address, for example, unless you give it to them.

So, many experts view cookies as mostly harmless. But some folks don't like them—they see cookies as a potential invasion of privacy. Give your credit card number to a Web site and there's no reason the site can't keep your name in a cookie to speed your order.

Privacy advocates wonder if Web sites can snoop on cookies left by other sites. And all

don't want www.shyster.com to steal credit card info that was stored by another Web site? With up-to-date Web browsers, this isn't possible.

But cookies work on the Web site's terms, not yours. The site decides what information to jot in a cookie and how to use it. Some users just don't want sites tracking them. Me, I don't mind it much. The sites don't know who I am, nor do they have my email address. I'm just a nameless, faceless Web surfer.

Cookie Central (<http://www.cookiecentral.com>), a great site devoted to the use and abuse of cookies, has this to say about privacy: "Some people do not like a file that may contain a cookie with information about where they have been, and what they do, if they can stop it. This type of information that is invaluable to some companies. ... Cookies can be used to track you on the Net, what sites you go to, what you like, and so on." Indeed, at least one company uses cookies to track the sites that you visit, then deliver targeted advertising banners.

Cookie Control

For privacy advocates and the paranoid, a cottage industry of cookie-crunching software has cropped up. Utilities with names like Crumbler

Password-protected sites can use cookies to store your username and password necessary for logging in—so deleting your cookies can make it a lot more difficult to log in to those sites.

and CookieCrusher will give you better control of your browser's use of cookies, or just erase all the cookies stored on your computer. (By the way, even without your intervention, cookies don't stay around, clogging your hard drive forever. They can be set by a Web site to expire after a certain date.)

Will you suffer dire consequences by deleting cookies or shutting them off altogether? Some sites will forget what ads you've looked at (big deal) and others will forget your preferences. Password-protected sites can use cookies to store your username and password necessary for logging in—so deleting your cookies can make it a little more difficult to log in to those sites.

In Netscape Navigator and Communicator 4.0, you can control how the browser handles cookies. Pick Preferences from the Edit menu, then click on Advanced. You can accept all cookies (the default), accept only cookies that get sent back to the site you're visiting (a more secure alternative if you're worried about advertisers tracking you), or don't accept cookies at all (the choice of militant anti-cookie surfers).

You can also tell the browser to warn you every time a site places a cookie on your computer. I find this rather tedious—when the cookie warning dialog box pops up, it interrupts the flow of using the Web.

Microsoft Internet Explorer 4 does not include the option to disable cookies entirely, but there is the option to warn you before a cookie is set. You can activate this by choosing Options from the View menu, choosing Advanced and unchecking the "don't warn before accepting cookies" box.

More information is available at Andy's Cookie Notes (<http://www.illuminatus.com/cookie.html>). There you'll find links, a very good description of how cookies work, and info on using cookies on your own Web site if you are so inclined. ■

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FreeCode <http://www.freecode.com> FreeCode archives the source code for over 100 Windows- and UNIX-compatible Web applications written in C++, Java, Perl, or Visual Basic [Exp #176]

French Kiss <http://www.ines.com/FrenchKiss> This Web site provides people with a new Java chat client. You can also set up your own chat room by inserting the French Kiss applet on your Web site—for free [Exp #176]

Human Ingenuity Industries <http://www.ingenuity.net> Turnkey solution provider. Web design, consulting, hosting, networking systems, and parts. We take you each step of the way [Exp #176]

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Virtualis Systems Web Servers <http://www.virtualis.com> Purchase virtual server space with your own domain for less [Exp #176]

Web MS Promote <http://www.webms.com/promote> Listing in the best [Exp #175]

Web Page Design <http://www.mspower.com> Webmaster/design.htm [Exp #176]

Site Garage Web Site Analysis <http://www.sitegarage.com> Check HTML META tags, spelling, download, and links. Improve ranking on search [Exp #176]

webCorporate <http://www.webcorporate.com> Web site packages [Exp #176]

Wrox Ultimate HTML Reference Database <http://www.rapid.wrox.com/html40> Covering all the HTML tags and attributes, legitimate and illegitimate, with descriptions, permissible values, and the equivalent CSS properties [Exp #176]

ZapMap <http://www.zapmap.com> Interactive, vector-based geographic hot-spot directory [Exp #176]

SERVICES PRODUCTS FOR SALE

Abendroth Consulting <http://www.abendroth-consulting.com> Company information and demos [Exp #176]

Action Wireless <http://www.actionwireless.com> Cellular phone accessories [Exp #176]

Advanced Technics <http://www.trustech.com> Artificial intelligence in combination with satellite communications [Exp #176]

Alan Gordon Enterprise, Inc. <http://www.alan-gordon.com> Sales and rental of plotter/picture [Exp #176]

Alfa Romeo Dealer <http://www.salsocar.com> [Exp #176]

America Online II Tracker <http://www.aol.com> Supplying heavy equipment and components for Caterpillar machines for over fifteen years [Exp #176]

Artist-at-Residence <http://www.artistatresidence.com>

Art for [Exp #176], by the artist one-of-a-kind, one at a time, vintage clothes, jewelry, and decorwork [Exp #176]

Asbestos Consultant <http://www.casv.com> Asbestos project management [Exp #175]

Astronomics <http://www.astronomics.com> Mail order retailer of astronomical telescopes and accessories, CCD equipment, birdwatching and nature study binoculars and spotting scopes since 1979 [Exp #176]

Autocom Products <http://www.autocom.co.uk> Autocom Products—creators of the ultimate motorcycle micromer. The perfect blend of high-quality components and designs, offering the optimum in performance for speed, music, comfort and ease of installation [Exp #176]

Bargains & Goods <http://www.wholesalefamily.com> Wholesale Family <http://www.shellyshopping.com> Low prices on women's, men's, and kids' [Exp #176]

British Travel International <http://www.britishtravel.com> Travel services for Britain and Continental Europe [Exp #176]

Bunny Graphics, Inc. <http://www.bunnygraphics.com> Providing the latest in promotional products such as mousepads, mugs, magnets, pens/pencils, endpapers, and much more! [Exp #177]

Business Management International Holding Corp. <http://www.bmi-usa.com> Business consulting, banking, financing, company formation, immigration, education [Exp #176]

Business Products Express, Inc. <http://www.bpeexpress.com> Offering 25,000+ office products below superstore prices, delivered next day. Distributorships available [Exp #175]

Carlisle Construction Co. <http://www.carlisleconstruction.com> Worldwide distributors of

cranes, construction equipment, and marine services [Exp #176]

Celebrity Bikini Mouse Pads <http://www.celebritybikini.com> An inexpensive bikini gift for that Web geek friend that has no life [Exp #176]

Clairtronics Network <http://clairtronics.com> computer assist A complete transportation claim processing service dedicated to the household moving industry [Exp #175]

Computer Again <http://www.web4free.com> put/get again Our service allows consumers to buy and sell their used computer equipment with security [Exp #177]

Corporate Security Consultants <http://www.procor.com> Provides advice on international security issues [Exp #176]

Crios Designs <http://www.crios.com> [Exp #176]

CyberMegaMail <http://www.cybermegamail.com> wac/mcm/owa/mcm_top page The leading shopping mall on the Internet [Exp #176]


CZ Jewelry <http://www.jewelrydirect.com> [Exp #176]

The Diesel Services Group <http://www.dieselservices.com> The Diesel Services Group provides leading-edge diesel fuel system and engine service, turbo rebuilding, machine-shop services and more. If you operate, repair, or own diesel equipment there's something here for you! [Exp #176]

Discount Phone Cards <http://ad.networld.com> Online sales 15 9-cent/min phone cards [Exp #177]

Earth's Author: The Republic Of Earth <http://www.earthauthor.com> Research, develop, and distribute products and services to help you achieve your goals, health, wealth, and happiness [Exp #176]

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Intel MMX 800MHz **\$397**
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Intel MMX 166MHz **\$1877**
Intel Pent 166MHz **\$1097**
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Intel MMX 166MHz **\$1437**
AMD K5 110MHz **\$1437**
Cyrilx MMX 800 **\$1437**

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PENTIUM II POWER 33MHZ

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16MB 6845 Tower Case w/ 1 Bay Drive
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16MB 6845 28 MONITOR (1525) + \$109

Pentium II MMX 300MHz **\$2147**
Pentium II MMX 266MHz **\$1967**

WIN95 3D GAME BLASTER Intel MMX 233MHZ

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486 P100 II Chipset 4PCU/ISA, 512 Cache, PHP Bios
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16MB 6845 28 MONITOR (1525) + \$109

Intel MMX 800MHz **\$987**
Intel MMX 166MHz **\$987**
AMD K5 110MHz **\$987**
Cyrilx MMX 800 **\$987**

\$977

MOTHERBOARDS / CPU

486 P100 II Chipset 4PCU/ISA, 512 Cache, PHP Bios
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16MB 6845 KEYB, Hi-Res Serial
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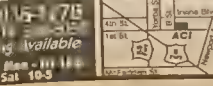
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eBay—Online Auctions
<http://www.ebay.com> eBay

is the leading person-to-person online auction community on the Web. Thousands of antiques, collectibles, toys, coins, computers and more [Exp #176]

Energy BioSystems Corp.
<http://www.energybiosystems.com> Company commercializing biotechnology using bacteria to remove sulfur from oil [Exp #175]

Filifax Specialist <http://www.filifax.co.uk> World-wide delivery of fax, fax, faxes, faxes and faxes [Exp #176]

Flowers International
<http://www.flowersintl.com> Australian flower service offering fast mail-order fresh cut flowers to UK and Europe [Exp #176]

For My Baby <http://www.formybaby.com> Unbeatable prices for baby strollers, educational toys and other accessories for newborn to preschool age children. The site features a searchable database and information about each product. [Exp #175]

Free Internet Business
<http://members.spee.com/shop/desail> Sign with Spee.com and start earning money today [Exp #176]

GDMS <http://pw2.netcom.com/~shivate/GDMS.html> Analytical services: glow discharge mass spectrometry [Exp #176]

Hackers <http://www.hackershomepage.com> They have over 300 plans, links, and assembled products for the serious hacker, phreaker, cracker, spy, and electronics enthusiast. International and inquiries welcomed. Don't miss [Exp #176]

Hurley-Davidson/American <http://www.hurley-davidson.com> Swap Meet <http://www.swapmeet.com> Classified ads for bikes, auto parts, accessories, manufacturers. Harley message

board, chat, event listings, and even biker personals [Exp #176]

Hats & Bags Manufacturer
<http://www.wanglia.com> Reliable manufacturer [Exp #176]

Hobby Builders Supply
<http://www.miniatures.com> Over 3,000 dollhouse and miniature items at discount prices. [Exp #176]

Holt Educational Outlet
<http://www.holtschool.com> Educational toys and teachers supplies at 10% to 50% off [Exp #176]

Home Exchange <http://www.HomeExchange.com> Thanks to the Internet and HomeExchange.com, anyone planning a trip can browse a convenient current list of homes in countries all over the world [Exp #176]

Houston Stained Glass Supply <http://www.hstgs.com> Wholesale glass supplies [Exp #175]

Ignition Interlock Group
<http://www.ignitioninterlock.com> A national Ignition Interlock service provider [Exp #176]

IVS, Inc. <http://www.ivs.com> Incorporated company IVS specializes in repair and support of industrial automation equipment, as well as repairs for computers and peripherals [Exp #176]

Jewelry Mall <http://www.jewelrymall.com> Everything about jewelry stores, gem and jewelry show dates, birthstones, wholesale, and more [Exp #176]

Katherine Ray's Web Site
<http://www.katherineray.com> Home page of Katherine Ray products [Exp #176]

Kullana & Associates
<http://toyrep.com> The educational toy specialists [Exp #176]

L.A. Food Services <http://www.lafoods.com> Food vending services [Exp #175]

La Fay Herbal Confections
<http://www.lafayherbs.com> Luxurious potpourri, incense, fragrances

and soothing luxurious herbal baths—perfect as a gift for any occasion [Exp #176]

Los Amigos Tortilla Mfg., Inc. <http://www.losamigos.com> Manufacturers of authentic corn and flour tortillas, tortilla chips, and cheese and salsa [Exp #177]

Louisiana-Pacific Corp.
<http://www.lpcorp.com> Headquartered in Portland, OR, a major manufacturer of building materials, industrial wood products, and pulp [Exp #176]

Lucy Mac Children's Store
<http://www.lucymacchildrensstore.com> Offers the original Baby Bunting catalog for newborns, Baby shower gifts, children's clothes, and [Exp #176]

Lucy's Knits <http://www.dreamcom.net/~lucynits> Shop for hand knitters [Exp #175]

Lux Transfer & Storage
<http://www.luxtransfer.com> Atlas Van Lines agent. Industry leader in relocations via Internet [Exp #175]

Madelny's Collectables & Things <http://www.madelny.com> Fine porcelain dolls, poly resin and porcelain figurines, and gifts [Exp #176]

Maltheny Enterprises
<http://www.menl.com> Free investment charting and analysis software, imported Asian products, links, and more [Exp #177]

Micro-Matics Corp.
<http://www.micro-matics.com> [Exp #176]

Millers Rentals & Sales
<http://www.millers-rentals.com> Complete party rental service—tents, tables, chairs, staging, live china, linen, weddings, corporate events [Exp #176]

Morning Glory Floral Design <http://www.members.aol.com/morningglory> Wedding flower arrangements, wedding planning and general floral design information [Exp #176]

Online Guide

Web Page Listings continued

to fall, Inc. <http://www.wildaboutthebestfloridagiftguide.com>

Virtual Business Center <http://www.vbusiness.com>
A variety of free classifieds and business opportunities. [Exp. #176]

Debut Inc. <http://www.ocu-kids.com>
Manufacturer of standard and custom-made LCD/ LCD modules, TI, STN, FSTN, LCD backlight modules, custom LCD modules, COB modules, chip-on-board, test connectors, and LCD modules. [Exp. #176]

Owner <http://www.silabath.com>
Wedding business. [Exp. #176]

Pillar Detective Agency <http://www.pillar.com>
A variety of services for forensic law enforcement, personnel, criminal, civil, and private matters handled. [Exp. #176]

Personal And Executive Coaching <http://www.pax-coaching.com>
Coach Peter Fahrenkamp has coached people successfully since 1992 in the US and Europe. [Exp. #176]

Precision Private Security <http://www.precisionhmi.com>
A security Guard Services company in L.A. with great rates. Member of the [Exp. #176]

Private A-Clap <http://www.readytotrain.com>
Prevent trainwrecking you to protect your vehicle from common damage for dings while advertising your business. [Exp. #176]

Printing <http://www.unipra.com>
Commercial Web and sales led printer. [Exp. #176]

Provident Companies <http://www.providentcompanies.com>
Compensation in disability insurance, employee benefits, and personal insurance. [Exp. #176]

Real-A-Isenator <http://www.real-a-isenator.com>
Building cableables create

products from concept to completion [Exp. #176]

Robert Scott—Cognex Agency <http://www.cognex.com>
A variety of services for competitive long-distance rates and international calling plans? Also offering prepaid phone cards [Exp. #176]

ScreenCo <http://www.screenco-online.com>
ScreenCo brokers advertising specialty products including a large variety of screen-printed and embroidered apparel [Exp. #176]

Search4People <http://www.search4people.com>
A variety of non-wearables [Exp. #176]

Sell Your Civil Court Judgment <http://www.sellyourcivilcourtjudgment.com>
A variety of services for consumer reporting agency files, driver license files and public records to find and locate lost family members or friends are available [Exp. #176]

ShrinkTank <http://www.shrinktank.com>
Psychology program and text files, links to testing sites, other psychology software sites [Exp. #176]

The Snowboard Shop <http://www.thesnowboardshop.com>
The online source for discount snowboard gear [Exp. #176]

Solitaire in Cold Rolled Sections <http://www.solid.com>
A variety of services for service center for solid and welded shapes [Exp. #176]

SoundStoos <http://www.soundstone.com>
Offering a vast catalog of titles, discounted at up to 20% [Exp. #176]

Sourdough Baker <http://www.sourdoughbaker.com>
A variety of services for bakery sourdough and traditional breads [Exp. #176]

Spa Cover Protector <http://www.spacoverprotector.com>
A variety of services for home, inreach, spa, solar [Exp. #176]

cover from the sun. Five-year warranty [Exp. #176]

TeamHayden <http://www.teamhayden.com>
A variety of services for the largest single source of central vacuum information. Continually adding new information and updates including how to make your home healthier and reduce childhood asthma [Exp. #176]

Terti's Special T's <http://www.tertis.com>
A variety of services for baby clothes and accessories [Exp. #176]

TicketWeb <http://www.ticketweb.com>
A variety of services for the Internet to sell low-cost tickets for events across the country [Exp. #176]

Tire Co. <http://www.tireco.com>
A variety of services for Earth-friendly products for home and office including cleaning, recycled paper, gifts, and more [Exp. #176]

UK Hotels And Conference Facilities <http://www.ukhotels.com>
A variety of services for hotels and conference facilities [Exp. #176]

Uncommon Country <http://www.uncommoncountry.com>
A variety of services for vacation homes and email service [Exp. #176]

Venus Systems <http://www.venusystems.com>
A variety of services for business products [Exp. #176]

Video Imaging And Optical Products <http://www.videoimaging.com>
A variety of services for video cameras, CCD cameras, video lenses, video lenses, lenses, video lenses, lenses, video lenses, lenses, video lenses, lenses [Exp. #176]

Video Plus <http://www.videoplus.com>
A variety of services for video products including the ASE series and American Women of Achievement series [Exp. #176]

Water Well Pump Supplies Wholesale <http://www.waterwellpumps.com>
A variety of services for water well pump supplies [Exp. #176]

SWI
A variety of services for software, hardware, and services [Exp. #176]

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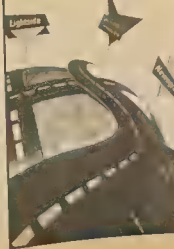
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A variety of services for internet connectivity [Exp. #176]

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Waterman Industries, Inc. <http://www.watermanusa.com>
Water control equipment and irrigation [Exp #176]

Watermark Sales And Distribution <http://www.watermark.net/~chibylwatermark.html>
Distribution and marketing of newly patented items [Exp #175]

Wild Adventures <http://www.wild-adventures.com>
An imaging company specializing in producing all types of imaging products. Scanning, printing, CD production and much more [Exp #177]

Wirthlin Worldwide <http://www.wirthlin.com> [Exp #176]

Wood Architects <http://www.visionimaging.com>
Specializing in commercial public, residential building in association with Visionimaging to provide computer color photography and designs for many [Exp #176]

World's Largest Candy Store Online <http://www.candydirect.com>
Thousands of choices. Free candy with [Exp #176]

FINANCIAL/ REAL ESTATE SERVICES

1% Homemaker <http://www.thomshomemaker.com>
Estate [Exp #176]

AdviseBuyer <http://www.groote.com>
Buyer rebates home [Exp #176]

Banco Betano, Simoes <http://www.bancobetano.com>
[Exp #176]

Taylor's Online Real Estate Guide <http://www.bob-taylor.com>
Discover [Exp #176]

Northeast Los Angeles includes information on mortgage financing, first buyer programs, home maintenance and [Exp #176]

Cashie Reale <http://www.cashie-reale.com>
Specializing in resale homes in Orange County [Exp #175]

Chapman Spira And Carlson LLC, Investment <http://www.chapman-spira.com>
Historical and current economic articles written in understandable language. Some of the material is very unique [Exp #175]

Dump Debts <http://www.dumpdebts.com/users/DumpDebts/Stop%20your%20creditors%20without%20filing%20bankruptcy%20Use%20them%20if%20they%20refuse%20to%20leave%20you%20alone!> [Exp #176]

Fleming Fund Management <http://www.fleming-fund.com>
The leading cross-border provider of funds in Europe [Exp #175]

Pacific Palisades <http://www.palisadeshomes.com>
Palisades Homes [Exp #176]

PBTK Online <http://www.pbtk.com>
CPA firm [Exp #176]

Petty & Butler Realty <http://www.pettybutler.com>
International [Exp #176]

Prudential Rand Realty <http://www.prrand.com>
Orange County's premier real estate [Exp #177]

Synergistics Research <http://www.synergistics.com>
Home Page [Exp #176]

Alanza <http://www.alanza.com>
[Exp #176]

Welcome to Mainstreet-USA <http://www.mainstreet-usa.com>
Farm Credit Services [Exp #176]

LEGAL SERVICES

Bankruptcy Los Angeles <http://www.bankruptcylosangeles.com>
Law Office of Mark J. Markus, handling all aspects of bankruptcy representation in the Los Angeles area [Exp #176]

Law Offices of Alex A. Yarbrough <http://www.lawofficesofalex.com>
Social Security disability attorney and social security disability representative [Exp #176]

Law Offices of John R. Kado <http://www.kado.com>
Attorney handling Computer, Bankruptcy, and Estate law, and transactional matters in San Jose CA [Exp #176]

Law Offices Of Paul M. Heller <http://www.green-card.com>
We specialize in employment-based and business immigration [Exp #175]

Legal.com <http://www.legal.com>
Friendly site with news and law related resources for consumers, legal professionals, law students. Also shop online for law books and legal forms [Exp #177]

Limited Liability Company Web Site <http://www.hia.com>
How to organize a new business as an LLC [Exp #176]

Richard J. Greenshane, Attorney <http://www.rjg.com>
Copyright, trademark, licensing, business, transactional [Exp #176]

EMPLOYMENT/ EDUCATION

Alanza <http://www.alanza.com>
[Exp #176]

Asia For Kids Educational Catalog <http://www.afk.com>
Your best resource for language and culture [Exp #175]

Career Database, Inc. <http://www.careerdatabase.com>
Celebrating our 10th year as the world's only formalized database matching individuals' employment history to company and recruiter's search criteria [Exp #176]

Digital Station <http://www.digitalstation.com>
Covering computer and Internet-related employment [Exp #176]

John Cabot University <http://www.johncabot.edu>
Offering study abroad programs and conferring Bachelor's degrees in Art History, Business Admin., Political Science, and English Lit [Exp #175]

Mr. Brain Tutor <http://www.mrbraintutor.com>
Live teachers online tutoring in mathematics, English, computer programming history, writing [Exp #176]

Prairie Resource Group, Inc. <http://www.pragroup.com>
Career Resources Group, Inc. modules help executive search process offering customized services on an hourly fee basis [Exp #176]

Register-It <http://www.register-it.com>
Search engine registration and Web [Exp #176]

Star Technology Group <http://www.startechnology.com>
Search firm [Exp #176]

Tutoring Center <http://www.tutoringcenter.com>
Tutoring in math [Exp #176]

Union Job Clearinghouse <http://www.unionjobs.com>
Posting open staffing and trades positions in organized labor that are now accepting members [Exp #176]

4work.com <http://www.4work.com>
Helping [Exp #176]

profit recruit volunteers on the Internet [Exp #176]

Alameda County Waste Management Authority <http://www.stopwaste.org>
A recycling resource for Alameda County CA and beyond, containing valuable information about recycling in and around the San Francisco Bay Area [Exp #177]

American Biomedical Group <http://www.abi.net>
Helping healthcare achieve maximum cost savings by bringing together engineering, financial and information excellence [Exp #176]

Association Macintosh Trainers <http://www.cybernet.com/mac>
The purpose of the association is to establish an international network of Apple Macintosh computer trainers [Exp #176]

Claremont Institute <http://www.claremont.org>
[Exp #176]

Cut Awareness Resources, CARES <http://www.cares-care.org>
Provides information to the campus community about [Exp #176]

Diabetes Wisdom <http://www.diabeteswisdom.com>
Offering diabetes support groups, educational classes, nutritional [Exp #176]

FAT: Fat And Terrific <http://www.fatandterrific.com>
Fat-positive resource and activities newsletter. Meetings third Saturdays of every month [Exp #176]

Foundation For Role Equity Education <http://www.roleequity.com>
[Exp #176]

FX-Freedom Of Expression Institute <http://www.fx.org>
[Exp #176]

4work.com <http://www.4work.com>
Helping [Exp #176]

shydog, low-income and others in San Diego CA [Exp #175]

ICCA Silicon Valley <http://www.icca-sv.org>
Invited to the quarterly scheduled dinner meetings fourth Tuesday of every month in San Jose [Exp #175]

J. Bellen, D.D.S. <http://www.jbellen.com>
Cosmetic Dentistry. Professionals in aesthetic and restorative dentistry [Exp #176]

Jefferson Club Technologies For Capitalism <http://www.jtc.com>
[Exp #176]

Los Angeles Chapter Of The Internet Society <http://www.isoc.org>
[Exp #176]

Los Angeles Macintosh <http://www.lamc.org>
Non-profit user group offers training programs, meetings, monthly magazine, employment networking, and tech support [Exp #176]

Lubbock Area Square And Round Dance Federation <http://www.lubbockdance.org>
[Exp #177]

MIMA Home Page <http://www.mima.org>
Home of the Multimedia Telecommunications Association [Exp #177]

National Center For Employee Ownership <http://www.nceoweb.org>
[Exp #175]

Native American Women's Health Education Resource Center <http://www.nawhrc.org>
[Exp #175]

NOCCO (North Orange County Computer Club) <http://www.noccc.com>
[Exp #176]



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Online Guide

Web Page Listings continued from page 176

Orange County NetWare Users Group <http://www.computerquest.com/orange/ncw/ncw.htm> Lists meetings, dates, and membership info. [Exp #176]

Peninsula Computer Club <http://www.series.com/jla/> [Exp #175]

Point Mugu Navy Flying Club <http://www.geocities.com/CapeCanaveral/Lab/1594> Navy T-34 flying club located at Camarillo, CA airport. Primarily training and recreational flying. [Exp #175]

San Francisco FreeBSD Users Group <http://www.archina.com/freebsd/freebsd.html> Meetings second Thursday of every month in San Francisco to discuss "Turning PCs into workstations." [Exp #175]

SEIU Local 250 <http://www.seiu250.org> Local 250 represents 40,000 healthcare workers in California. [Exp #176]

Silicon Valley Association of Software Entrepreneurs <http://www.svae.org> Launch of successful software businesses. [Exp #176]

Sutter Lakeside Hospital <http://www.sutterlake.org> Description of hospital services, community job openings. [Exp #176]

Technical & User Groups Network <http://www.tugnet.org> 24-hour bulletin board, meeting calendar, info. [Exp #175]

Telegraph Hill Dwellers <http://www.ohmnet.com/andA/> Francisco neighborhood association. [Exp #176]

Unofficial Nintendo-64 Home Page <http://www.nintendo64.org> [Exp #178]

PUBLICATIONS

Aboriginal Independent Newspaper <http://www.aboriginalnews.com.au> The Aboriginal Independent Newspaper is a self-determination project begun by a group of Nyongar Aboriginal people in Western Australia. [Exp #176]

Anillo Area Shoppers Guide <http://www.anilloshopper.com> Weekly publication with online classifieds serving northern Wisconsin. [Exp #175]

Bayanal Magazine <http://home.earthlink.net/~malaya/bayani.html> An online magazine of Filipino arts and culture. [Exp #177]

Bill Bradley Listening <http://bradley4.com/bradley4/> A new monthly interactive column written by former US Senator Bill Bradley. [Exp #176]

Comics Conspiracy <http://www.comicsconspiracy.com> Comics and publishing. [Exp #176]

Confucius-Publishing Co. Ltd. <http://www.syspoint.com/br/rycclandmnd> Confucius sayings and information in sudden languages plus over 100 rare pictures. [Exp #176]

Defense Systems Daily <http://defence-data.com> The Internet's premier daily news magazine for the international defense and aerospace industry. [Exp #176]

Easy Jewish Cooking <http://www.jcn18.com/cst/pls/jcn18/paper/index.asp?columnID=102> Cooking articles and recipes by Rosalyn Manesse, author of the book *Easy Kosher Cooking*. [Exp #175]

Edillon Shimizu <http://www.ohabashira.co.jp/~dm/andA/> International art, education, and cross-cultural understanding. Japanese English editions. [Exp #176]

Electronic Art <http://homeat.giznet.net/studio/pub.html> Thompson Studios can convert manuscript to electronic book. [Exp #175]

Flamenco-world <http://www.flamenco-world.com> The bilingual flamenco magazine. [Exp #176]

Jewish Heritage Online Magazine <http://www.jewishheritage.com> This new, online magazine makes Jewish learning thoroughly accessible and enjoyable using the latest in interactive technology. [Exp #177]

LaosSearch <http://www.asia.countrypoint.com/laos> A Web directory for information on Laos and other Southeast Asia countries. [Exp #176]

The Last Kalun <http://www.netredcor>Last/P1.html> A novel of the past and the future, by John Curt. [Exp #177]

Latin American Arts & Online Journals and News <http://www.syspoint.com/br/rycclandmnd> Gallery of Latin American artists and special professional news for intranets. [Exp #175]

Montana Magazine <http://www.napac.com/montana> Montana pictorial books direct from publisher in Helena, MT. [Exp #176]

New Information and Communication Technology in Africa <http://www.unipad.org/unipad/pd/cincubator/africa/bib.html> [Exp #176]

Obesity News and Research <http://www.obesity-news.com> Online newsletter and Web site on obesity research. Hard copy also available. [Exp #176]

Pixel Place <http://www.pixelplace.com> Reviews, computer graphics software, books, games, programming tools, movies, laser discs music and more. [Exp #176]

Stereography Magazine <http://www.stereography.com/greenimages> Stereo eyes. Covering art, science, stereoscopic imagery, supporting LCS. [Exp #176]

Resources <http://www.treacorp.com> Computer technology resources. [Exp #176]

Trans-Atlantic Online Magazine <http://www.transatlanticpub.com> Wide variety of books available from Trans-Atlantic Publications. [Exp #176]

Two Dog Press <http://www.twodogpress.com> Publishers of distinctive, memorable books of poetry and books about dogs. [Exp #176]

unGROOM's [http://www.ungroom.com The men's perspective on engagement, marriage and what follows. \[Exp #176\]](http://www.ungroom.com)

Whitepapers With Attitude <http://www.jwworld.com> A monthly newsletter for people who deploy enterprise groupware. [Exp #176]

ODDS & ENDS

Advanced Kinesthetics Concepts <http://www.gocities.com/oddsprings/7750/> Holistic approach to holistic health using advanced kinesthetics, radiances, and huna. [Exp #176]

Awareness Holistic Books and Information Center <http://www.ps.netaware> Holistic health, books, info, gifts, and classes in San Mateo. [Exp #175]

Bottled Water Web <http://www.bottledwaterweb.com> Everything you need to know about bottled water, including new bottle's profiles, resources, links, and classified ads. [Exp #176]

Central <http://www.crimscope.com> East European CrimeScope. [Exp #176]

CME Home Page <http://www.ryalmsnet.com> Comprehensive listing of national and international continuing medical education courses. [Exp #177]

Francis <http://www.mazent.com> Church ornaments and religious items. [Exp #176]

Hatha Yoga <http://www.geocities.com/skrshnanan/dhatha.html> [Exp #176]

Investment And Speculation Psychic <http://www.concentric.net/~L77280/> PSYCHIC shimi. Provides free divining, investment and speculation in the DJIA, stocks, bonds and gold. [Exp #177]

Vision <http://www.kid-vision.com> See live video of your child in day care over the Internet! [Exp #176]

King & Queen Of Hearts <http://www.geocities.com/westhollywood/6482/> A fund raiser for Friends for Life. [Exp #176]

Korea Narrow Loom Iron Works <http://www.hanbokkor.net/kor-ke-sopul> Manufacturer of high-speed narrow fabric needle loom, knit braiding machine, winder, warping machine, etc. [Exp #176]

Lladro Porcelain, Spain http://www.accessnet.es/lladro/lladro_porcelain and Swarovski crystal. [Exp #177]

Medic Alert Home Page <http://www.medicalert.org> Emergency medical information and identification (ID). [Exp #176]

Phoenix Center For Clinical Research <http://www.pccr.com> A center for pharmaceutical clinical trials and drug development. [Exp #175]

Pigeons <http://www.oze-mail.com/and-pigeons/index.html> Breeding center for racing pigeons. [Exp #176]

Pipe Organ And Music <http://www.organdesign.com> Organ building, design history of the organ and music. [Exp #175]

Pixel Photo <http://www.pixelphoto.com> A digital imaging and digital photography guide for advertisers, directors, and producers. [Exp #176]

Plastic Surgery Interactive Resource <http://www.aol.com/delta> The place for honest information on cosmetic surgery. [Exp #175]

Rooflet <http://www.rooflet.net> Supply the homeowner, roofer, roofing distributor, and roofing manufacturer one location to receive or distribute any information regarding the roofing industry. [Exp #176]

Shelter Assistance Association <http://marco.speedsoft.com/shelter/> A non-profit corp whose mission is to provide the communication link between recovery-based facilities and the person on the street suffering. [Exp #177]

Southwest Volcano Research Center <http://www.goodnet.com/~ej7670/> Volcano eruption forecasting and updates on latest eruptions worldwide. [Exp #176]

Sunshine International <http://www.sunshinegirls.com> Asian women desire romance, marriage. World's largest correspondence service since 1984. Free brochure. [Exp #176]

The Waters Edge <http://www.valfordesign.com> A retreat, a resource for the creative business spirit. [Exp #176]

Yoga <http://www.yoga-concilio.com> A site for concentration and meditation. [Exp #176]

PERSONAL HOME PAGES

Ancient One's Crypt <http://www.geocities.com/SunsetStrip/Vegas/3921/> Fun for all ages! Java Script music, links, chat, and more! Get your info here! [Exp #177]

ARVnet Emptor: Tricks of the Great American Car Deal <http://www.arvnet.com/user/arvnet/> Lemon-proofing the great American sales, lease and service deal for village family values. Trunkloads of free info. [Exp #176]

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Web Page Listings continued

Cool Stuff <http://www.geo.cities.com/SiliconValley/6555> Useful stuff for your PC, HTML links, animated gifs, Looney Tunes, and more cool stuff. [Exp. #176]

Daniel Contreras Home Page <http://home.pacbell.net/contreras/index.html> Daniel Contreras is a Chicano activist in Southern CA. My site contains several interesting Latin links and will soon contain an all gallery honoring Mexican heroes. [Exp. #177]

Eric's KittyKat Korner <http://members.tripod.com/~KittyKatKorner> RealAudio songs for all lovers; pics of my orphaned and saved kitties. [Exp. #176]

GFY Avoidance <http://home.earthlink.net/~khrnos> Century cable gripes, Carl Sagan, Hodgkin's disease, hypertexts, and more. [Exp. #176]

It's A Wonderful World <http://www.itswim.com/kind> A wonderful world for people who are interested in creating a safe and trusting world for all people. [Exp. #176]

Mark D. Nickelson Personal Web Resume <http://www.careersteps.com/nickelson> This is my personal Web resume highlighting my employment history, education, and seeking an entry-level position in the computer industry. [Exp. #177]

Mark L. Falcover Film Page <http://members.com/MFalc/home.html> Reviews of current films, videos, occasional commentary on the industry. [Exp. #176]

Paul Walsh Home Page <http://3spade.com/pwalsh> in Canyon County, CA. Paul Walsh is a freelance artist who does the art for the... [Exp. #175]

World Wide Pet Name Project <http://www.wellwell.com/petnames> Browse thousands of unique pet names... [Exp. #175]

your pet world famous! [Exp. #176]

GOVERNMENT/ POLITICS

Biodiversity Form: Discuss Nature Conservation <http://real.geog.ucsb.edu/doforum/home.html> Biodiversity Forum is a site for people like you to express views related to biodiversity loss and conservation. It is designed to serve public education, exchange, and opinion research objectives. [Exp. #176]

Bureau Economique <http://www.cote.divoire.co> Site officiel du Bureau Economique. Pans and Washington. [Exp. #175]

Corporate Watch <http://www.corpwatch.org> As all the Fortune 500 companies jump onto the World Wide Web bandwagon, who's keeping an eye on them? Corporate Watch is! [Exp. #175]

First Amendment Center <http://www.1stamc.org> Congress shall make no law respecting establishment of religion, or prohibiting the free exercise thereof, nor abridging the freedom of speech, or of the press, of the right of the people peaceably to assemble, and to petition the government for a redress of grievances. [Exp. #175]

Health Finder <http://healthfinder.gov> Designed to provide consumers with easy access to the widest range available of online, accurate, up-to-date health information from the U.S. government and its many partners. [Exp. #175]

Irish Trade Union's International <http://www.irsu-trade.ie> Providing information for buyers and sellers of goods and services. Available in six languages. [Exp. #176]

Officer's Reference Page <http://www.nccscl>

<http://www.jmsi/index.htm> A reference page for law enforcement canine officers. [Exp. #176]

Ken's Communist Comics <http://www.pceat.com/Area51/2369/kcc.html> The only communist comics shop in California. Our prices are Marxistic and the service is Maoevist! [Exp. #175]

Library Of Congress Information Bulletin <http://www.loc.gov/loc/lob> [Exp. #175]

Mumia Abu-Jamal Web site <http://www.mumia.org> Learn about Mumia Abu-Jamal... the latest updates... his case. [Exp. #176]

Peacemaking - Crime <http://www.westga.edu/fletcher/peace.html> Peacemaking & Crime seeks to provide information about peacemaking in the criminal justice system and about alternatives to the criminal justice perspective. Features include news items, explanations of the perspective and links to related sites. [Exp. #176]

Political Ecology Group <http://www.pcg.org/peg> PEG is a multi-racial, volunteer-based organization working for environmental justice in the SF Bay Area. [Exp. #176]

Secret FBI Files Web Site <http://www.crunch.com/01/secret01secret.html> Thousands of secret FBI files, never before suspected. [Exp. #176]

Social Development Web Site Of Pakistan <http://www.digitalk.com/devpak> Pakistan's first Web site on social sectors. [Exp. #175]

Consumer Information <http://www.pueblo.gov> Find the information from more than 100 US... [Exp. #175]

User's Guide To Declassification Of Independence <http://www.founding.com> Mainly for educational... [Exp. #175]

tracts, sermons, and other documents from the Founding Fathers. [Exp. #176]

ARTS

Odisho 3D Gallery <http://www2.inow.com-mys/tery/gallery> A gallery of some nice, original 3-D pictures. Not many, but will add more soon. [Exp. #176]

All About Art <http://www.allart.com> Fine Art prints and reproduction sales. [Exp. #177]

American Photographer in Spain <http://www.angellera.com/castofotografia.html> Spanish and Spanish landscape new format with great photos, and Spanish links too! [Exp. #176]

Art Designer And Sculptor <http://www.rhughesart.com> Sculpture, private commissions, mobiles and prints. [Exp. #177]

Art Of All Sorts <http://www.artofall.com> Buy reproductions of the great masters online! Cezanne, Chagall, WuChen, Gauguin, Hiroshige, Kahlo, Klee, Matisse, Monet, O'Keefe, Van Gogh, and more. [Exp. #176]

Artist Roy Dimon <http://www.users.interport.net/~dimon> This incredibly famous artist spins an ongoing tale. [Exp. #176]

Canneball Express <http://www.best.com/canneball> A video project in-progress about urban firestorms, fire safety, environmental issues. [Exp. #175]

Digital Snapshot Of The Day <http://www.kurz.net/> photo gallery; digital photo snapshots. Take a close look at the snapshot of the day, which is updated daily by Martin Kurz. Every day live gives us the best subjects. [Exp. #175]

Gary Wagner Fine Art <http://www.garywagner.com> Fine art photography. [Exp. #175]

Golden Gate Gallery <http://golden.gategallery>

<http://www.modestlypricedart.com> Modestly priced art prints and originals by noted California artists, especially Don Irwin and Jane Gallagher. [Exp. #176]

Native Hands Gallery <http://www.nativehands.com> The brainchild of Navajo silversmith Jennifer G. Redhorse, this new site is devoted to the history, techniques, materials, and makers of Indian silver jewelry. [Exp. #176]

PhotoSphere Images, Ltd. <http://www.photosphere.com> PhotoSphere offers professional, royalty free stock images on CD-ROM, covering people, places, nature, backgrounds, and the economy. View our images and order collections online. [Exp. #176]

Selected Poems, 1997 <http://members.aol.com/TerryMcCab/home.html> A page of elegies, editing, and thought-provoking poetry. Updated frequently. [Exp. #175]

Southwest Art Liquidation <http://www.fine-art.com/southwestart/Western> Native American art, bronzes, lithos, originals, sands, and more! [Exp. #176]

Ted Alvy Cosmos Topper Home Page <http://3spade.com/tytopper> '80s LA underground radio, rebop, beatniks, yuppies, hippies, zoot horn... [Exp. #175]

Wild Images By KKR Images <http://members.aol.com/denali33/cards/krk/krk.html> The site is about nature photography. [Exp. #176]

ENTERTAINMENT /LEISURE

20 Something <http://www.20something.com> IRC is for people in their twenties looking for good clean chat. [Exp. #177]

Absorbable <http://www.absorbable.com> Adventure travel. [Exp. #176]

Across The Bay Tent And Breakfast Adventure Co <http://www.tentandbreakfastalaska.com> How about a tented breakfast in the Kenai Peninsula? The only way to get to it is by water taxi... our tour cost \$175 direct. [Exp. #176]

Actual <http://www.actualists.com> An information showcase for and about St. Louis. [Exp. #176]

Ames Music CD's, Cassettes,... <http://www.AmesMusic.com> [Exp. #177]

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Astrology Now! <http://www.astrology.com> Detailed information about your astrological sign, compatibility with others, and of course horoscopes! [Exp. #176]

Black Kat <http://www.black-kat.com/blackkat/> Promotes appreciation of Japanese animation and culture by showcasing current anime, art, and related exhibitions. [Exp. #176]

Bright Spot <http://www.getawaynow.com/bahia-luminosa> Costa Rica - Bahia Luminosa beachfront resort and hotel where our forest meets the sea. [Exp. #176]

Capt. Ted's Whoop!99 Crane Tours <http://www.silvaco.com/~sarab/crane.htm> Vacation for the adventurous where to go... the whooping... Includes... and fact prints plus original art. [Exp. #176]

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Product Spotlight

Updates

ACS Software, Inc. has released **AutoEDMS v5. \$695** ACS Software, Inc. 25825 Eshelman Ave., Lomita, CA 90717-3220 (310)325-3055, or URL: <http://www.acssoftware.com>

The AG Group, Inc. has shipped **EtherPeek for Windows 2.0**. The AG Group, Inc., 2540 Camino Diablo, Ste. 200, Walnut Creek, CA 94596 (510)937-7900, info@aggroup.com, or URL: <http://www.aggroup.com>

Andromeda Software, Inc. has made available **Andromeda Shadow Filter**, a multi-platform Photoshop plug-in. Andromeda Software, Inc., 699 Hampshire Rd., Ste. 109, Thousand Oaks, CA 91361, (805)379-4109 or URL: <http://www.andromeda.com>

BumbleBee Technologies has announced that the best-selling **Parachute!** guide, **What Color Is Your Parachute?**, is available on CD-ROM for Windows 95 \$49.95. BumbleBee Technologies, 11 Congress St., Ste. 250, Boston, MA 02109 1-800-811-8347 or URL: <http://www.parachute.net>

Commex Technologies, Inc. has released **Imager 730 Professional 30-bit Scanner \$149**. Commex Technologies, Inc., 2031 Concourse Dr., New Jose, CA 95131 1-800-526-6629 or URL: <http://www.themagick.com>

Digital Computations, Inc. has introduced **DOE KISS**, a design experiments software package. MicroSoft Excel \$99. Digital Computations, Inc., 1000 Cutting

NW Albuquerque, NM 87114 (719)531-0777 or aaops@aircad.com

Excel Software has updated **MacAnalyst, MacA&D, MacTranslator, and QuickCRC** for MacOS B. Excel Software, (515)752-5359, info@excelsoftware.com, or URL: <http://www.excelsoftware.com>

Informative Graphics Corp. has introduced **Myriad 4.0**. Informative Graphics, 706 E Bell Rd., Ste. 207, Phoenix, AZ 85022 (602)971-1714 or URL: <http://www.infogrp.com>

Mitsubishi Electronics America Inc. has debuted **AMITY CN**, a mini-notebook, \$1,995. Mitsubishi Electronics America Inc., 5665 Plaza Dr., P.O. Box 6007, Cypress, CA 90630 (714)220-2500

Network Instruments, LLC has released **Observer 4.5 \$695**. Network Instruments, LLC, Fourth Floor, 8800 West Highway Seven, Minneapolis, MN 55426 1-800-526-7919, info@netinst.com, or URL: <http://www.netinst.com>

Soflink, Inc. has announced **BravoMAIL**. Soflink, Inc., 326 12th Ave., Ste. 7, San Francisco, CA 94118 (415)831-9270 or URL: <http://www.soflink.com>

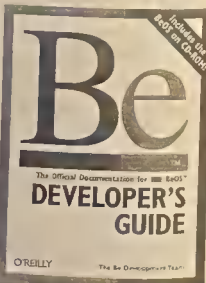
Westbrook Technologies, Inc. has released **File Magic COLD 5.0**. Westbrook Technologies, Inc., 22 Summit Pl., Branford, CT 06405 1-800-WHY, info@filemagic.com, or URL: <http://www.filemagic.com>

Product Announcements

Books

Be Developer's Guide

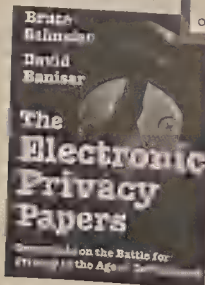
Featuring Silicon Graphics workstation performance, the Be operating system (BeOS) is the ideal platform for high-end graphics and multimedia. The *Be Developer's Guide* provides developers with access to the internals of the BeOS. Describing all the foundation kits in the operating system and how to use them. Topics include: the Application Kit, the kits that gets you started, the Storage Kit, an interface to the file system; the Interface Kit, everything you need to design a graphic user interface; the Kernel Kit, providing access to the lowest programmable level of the BeOS, and the Support Kit, a



catchall for common functionality and definitions. The *Guide* includes a CD-ROM containing the entire BeOS (\$49.95). O'Reilly and Associates

The Electronic Privacy Papers

Security expert Bruce Schneier, along with privacy advocate David Banisar, are the editors of *The Electronic Privacy Papers: Documents on the Battle for Privacy in the Age of*



Surveillance. This book shines a spotlight on the backrooms of secret government agencies, like the NSA and the FBI, where crucial decisions on the future of the information age are made with little or no public input. By also gathering printed material by organizations ranging from the ACLU to

Product Announcements *continued*

the *New York Times*, this book provides a look at how privacy issues are being brought to the attention of the public. It contains scores of previously classified government and industry documents, as well as articles, speeches and memorandum, written by key figures in government, communications, technology, and journalism (\$59.99). Wiley Computer Publishing, 605 Third Ave., New York, NY 10158-0012. (212)850-6000. URL: <http://www.wiley.com/compbooks/>

PC Hardware

CVideo-Mail

CVideo-Mail allows users to record video and audio messages and send them as attachments to email. It is compatible with all standard MAPI-compliant email packages such as Eudora and Netscape, as well as other email programs that accept attachments including AOL. CVideo-Mail includes software, a PCI video capture board, which is compatible with all NTSC, PAL and SECAM video inputs. There is also an optional Philips XC731/495 desktop camera (\$149; \$249 with optional desktop camera). Cubic VideoComm, Inc., 9333 Balboa Ave., San Diego, CA 92123. 1-888-295-0930, (619)505-2030. URL: <http://www.cvideomail.com>

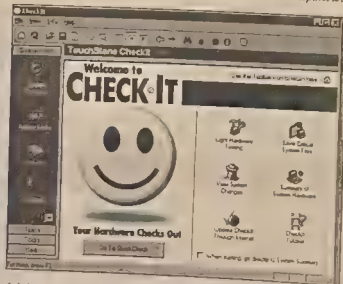
Crosspad

Crosspad enables users to write in ink on standard paper and transfer their handwriting directly to the PC. Once in the PC, the handwriting can be filed, reorganized, faxed, emailed or printed in hand-written form or converted to ASCII text for any Windows application. Using a specially designed electronic pen and pad designed by Cross Pen, and technology developed by IBM Research, Crosspad users take notes in ink on a standard 8.5" x 11" pad of paper. The pen emits a signal that is transmitted through the paper and captured by the pad, simultaneously recording the handwriting as an "electronic page." When the paper page is turned over, the user presses a button on the bottom of the Crosspad to create an electronic page. Users can view the "digital handwriting," and Crosspad easily connects to a PC via a cable that attaches to any standard COM port. In seconds, the handwriting is transferred to the PC and appears on the screen. Cross Pen Computing Group, A.T. Co., Lincoln, RI (401)333-1200.

PC Software

CheckIt v5 For Windows

CheckIt v5 for Windows, 32-bit hardware troubleshooting utilities, features a new approach to troubleshooting that finds problems, and leads the user directly to the tools that can provide a solution. First, QuickCheck tests and locates problems automatically. If a problem is detected—whether a glitch, setup conflict or change in performance—the program's troubleshooter guides the user to the tests and information needed to solve it quickly. These include power-



ful hardware tests, extensive system information, and a fast, easy way to compare system changes. For example, CheckIt's Find It feature allows users to search for specific information they need, rather than having to look through pages of system information. CheckIt offers more than a dozen comprehensive information displays identifying everything users need to know about their computer system (\$49.95, estimated street price). TouchStone Software Corp., 2124 Main St., Huntington Beach, CA 92648. (714)969-7746. URL: <http://www.touchstonesoftware.com>

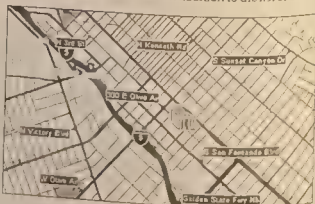
MakeTIFF

MakeTIFF provides a single solution for companies standardizing on TIFF format and for users who want a batch way to convert files to TIFF. It creates TIFF files from any Windows file, provided the authoring application is available and supports Windows print drivers. When

MakeTIFF finds new files in a specified input directory, it calls the native application appropriate for the file type and uses that application's print driver to capture the file to TIFF format. Because the native application is used, the resulting files are 100% accurate. MakeTIFF operates on Windows NT 4.0. Network users can transfer files to an input directory monitored by the MakeTIFF program on an NT station and retrieve the resulting TIFF files from an output directory. The input/output directories can be located on any network drive (SMB). Informative Graphics Corp., Phoenix, AZ. URL: <http://www.infographic.com>

Essential Courts

Combining Etak's digital maps with an extensive library of information about all 683 federal, state, and county courthouses throughout California, Essential Courts offers traveling lawyers highly accurate maps to use when trying to find a courthouse in unknown territory. By mouse-clicking the "Show Me the Map" button on the court data screen, users can view major streets and highways within a one- to three-mile radius of their court destination. In addition to the list of cour-



thouse mailing and physical addresses, the program also includes key phone numbers, personnel contacts, data about judges, a guide to each court's local rules, and more than 9,000 special rules. Users can attach personal notes about each court facility or judge (\$395, with updates every six months). Etak, Inc., 1430 O'Brien Dr., Menlo Park, CA 94025. URL: <http://www.etak.com>, Essential Courts was developed by Essential Publications, Inc., San Francisco, CA. 1-800-286-0111.

continued on page 130

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Product Announcements *continued from page 186*

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95 and NT on the Intel x86 platform. (\$695) Ipswitch, Inc., 81 Hartwell Ave., Lexington, MA 01974 676-5700. URL: <http://www.ipswitch.com>

ActiveWeb 2.1

ActiveWeb Integration System integrates diverse information resources, such as packaged applications, databases, browser applets, and message systems. The system is based on events—messages that reflect a customer's business processes. Version 2.1 offers digital signature and Secure Sockets Layer (SSL) connectivity for increased security, a new Adapter for DB2 mainframe databases, and upgraded Java support for SunSoft's JDK 1.1. A Commercial Adapter Development Kit is also available for third-party developers who want to build ActiveWeb adapters to integrate other products into the ActiveWeb system. The Database Adapter, which integrates mainframe data with Internet,

intranet, as well as custom and purchased applications. SSL support is offered as an Information Broker option for customers who need to send encrypted data over a secure socket with digital signature authentication. ActiveWeb complies with the latest SSL 3.0 specs and uses the RSA public key encryption scheme. (Pricing varies with the size and complexity of customer projects.) Active Software, Inc. (408)988-0414 URL: <http://www.activesw.com>

F-Secure Virtual Private Network 1.1

F-Secure VPN 1.1 is a software-based encrypting router that lets companies secure traffic between local area networks and virtual Private Networks using the Internet or other insecure networks. It is available globally and offers security of at least 128-bit encryption. F-Secure VPN features a new Network Editor that supports the design of a complete VPN. It encrypts TCP/IP packets, both the header and the payload, on the fly for transport over the Internet or intranet. It provides the most powerful encryption available,

including industry standard algorithms of RSA, triple DES, and Blowfish, as well as data compression, authentication of encryption servers and performs distributed key management (\$2495) Data Fellows, Inc., 675 N First St., #645, San Jose, CA 95112. (408)938-6700. URL: <http://www.DataFellows.com>

Macintosh Hardware

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The PowerBook PCI Expansion System is designed for the Macintosh PowerBook 3400 and lengthen PCI slots in the PowerBook computer in a separate rack mount or desktop enclosure.

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MultiMedia & BEYOND

MULTIMEDIA 101

Art, Technology, And The Valley

State Of The Art

In This Section:

Multimedia 101

Art, Technology, and The Valley

State Of The Art

By Jonathan B.

Technology, Culture, And Art

The San Jose Museum Of Art's "State Of The Art"

Art Of Technology

By Jonathan B.

I wish that I could somehow get every single executive in Silicon Valley to look at that timeline. Because I swear to God I would change the way they look at art, and I would change the way they make their technology if they realized that it's more than just speed. It's more than just bandwidth—that there are aspects of interactivity, aspects of the way we use technology that come from the human soul, that affect the way we think and the way we look at the world," explains Randall Packer, director of multimedia for the San Jose Museum of Art, in a moment of high-flying transportive passion.

The timeline Packer is talking about is the Interactive Timeline, also described by my fellow columnist Tony Reveaux. Produced in association with the Alternating Currents exhibition at the San Jose Museum of Art, it's designed to illustrate the connections over the past forty years between art, technol-



and that peculiar combination of social and historical events and the way we live known as culture.

Without doubt, these three strands are now entwined in a tight embrace; as a technology emerges, artists rush to use it; events occur, artists interpret their significance; as a technology reaches the market, culture responds with new styles of fashion and play, technologies are developed in response to perceived cultural needs; sometimes artists even see the future and encourage the emergence of a new technology.

Occasionally the timeline reveals some close-linked cause and effect, but the overall message is that we live in fast-moving and confused times, with multiple vectors where the three strands of art, technology, and culture tumble over each other, rolling together down the slope of history, even as they clasp each other close.

It's certainly not all direct connection

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ART, TECHNOLOGY, AND THE VALLEY *continued*

Different art, events and technologies addressing the same issues appear simultaneously, widely separated in space or milieu, apparently simply forming out of the zeitgeist of the time. And, of course, events can just happen at random. ■ the time seemingly without reference ■ anything else, although later gaining cultural significance and perhaps falling into a pattern.

That's my interpretation, anyway.

Whatever else, the fact that Reveaux and I both found our independent ways to the Alternating Currents exhibition, the Interactive Timeline, and Randall Packer at the same time should tell you something about the current state of multimedia and the significance of what's going ■ at the San Jose Museum of Art.

NOTHING NEW UNDER THE SUN?

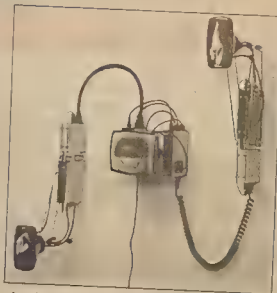
Packer's timeline covers the past forty years, a period when technology has pretty much become shorthand for "digital information and communications technology" while the word "multimedia" is often used as the catch-all term for digitally produced, manipulated and distributed media.

However, both technology and multimedia sunk roots deep into the loam of human artistic energies long before computers became commonplace. The timeline itself illustrates this, for example, with references ■ analog video ■ from ■ early '60s, while the Alternating Currents exhibition ■ almost entirely pre- and non-digital work.

In fact, a large part of its appeal is that the works ■ mostly ■ large and so fine-grained that you could not possibly experience them through the small pixelated constraints of ■ screen, although ■ pieces either are indeed screens themselves or include screens, and many use electronics of one kind or another.

The common thread is that the works ■ commenting ■ the effects of technology upon us humans ■ society at a ■ when technology of all kinds ■ become increasingly intrusive ■ everyday life. The type of technology has also changed, from relatively simple machines designed to perform physical ■ to complex electronic ■ that work ■ in the ■ of media and communication—areas ■ mind, areas where manipulation becomes ■ ■ of convenience but a ■ concern.

I remember that ■ computer art I ■ was at the Cybernetics Serendipity exhibition, held at the Institute of Contemporary Arts ■



London in 1968. At the time, it didn't mean much to me. Ignorant and unformed as I was, the art appeared to be little more than various wiggly and straight lines making some interesting, but hardly earth-shattering, shapes, all ■ black and white. It was as simple and ultimately unimpressive ■ most digital multimedia still was in the early '90s when compared to highly developed forms such as films, video, books, or music.

However, ■ more attuned observer, Stewart Brand, writing in *The Last Whole Catalog* in 1969, observed, "It must have been an Event. [Actually, I did get that much even back then!] Certainly it is the best collection of computer art yet, the only one not dismissible as engineers kidding themselves. There's been talk for years (e.g. *The New Landscape*, 1958) of how ■ and science are gonna come together, and indeed communications have improved. But there was no direct avenue, no real mutual domain. Not until computers got common enough for funky hands to lay hold of them ■ do tricks for funky heads. That's happening now."

In ■ more prophetic vein, Brand concluded, "Ahead, deep space."

However, art and technology have danced their dance for far longer than that. A good art history book will have an index with perhaps ten or more ■ for technology and ■ along, of course, with timelines of various artistic styles ■ their periods of preeminence. In a sense, artists have always used technology—and, in a way, ■ is a technology and always has been, right from its early days ■ the ■

Beyond that, of course, art has frequently both portrayed what ■ going ■ in the culture of ■ times ■ commented on aspects ■ that

culture. Over approximately the past five centuries, since Gutenberg, technological change has been ■ gradually increasing factor in social and economic conditions, while the two centuries since the Industrial Revolution have seen that influence accelerate wildly. Artists have responded in many ways to technology's effects—from revulsion at the loss of natural beauty and the social changes wrought by the economic power of new technologies, to swooning rapturous lust for the shiny new machine age with its promise to sweep away all the lingering remnants of our toiling sweaty past.

Packer wisely has not attempted to bite off the whole of this history with his timeline. Instead, he declares his aim was "to try to explain to the public where this multimedia phenomenon comes from. It didn't come out of thin air and it didn't come out of the industry, that's for ■

"A lot of people associate multimedia with computers and even more specifically with CD-ROMs. . . . I've been very interested in the roots of interdisciplinary art, electronic art, interactive art, all of which constitutes a form that's been evolving much longer than this industry has even existed."

In fact, Packer believes that Wagner was among the first successful multimedia artists, claiming, "Wagner changed the world because he understood presentation. He built ■ opera house where it was ■ about presentation. He hid the orchestra in the pit. He turned the lights down. He built the acoustics so you were enveloped in sound. It's about presentation." Partially explaining the confused state of contemporary computer-based multimedia, he adds, "The computer industry doesn't understand presentation."

Packer expands his point by insisting, "There's a lot to look ■ in terms of this broader view of the medium. It gets you thinking about what the real fundamental issues are aesthetically ■ terms of a multimedia art form. It's not just clicking ■ buttons, it's not even a clicking thing, it doesn't need to be a click thing. For me, even more important than the interactivity is the notion of the integration of different media—which gets overlooked quite often in multimedia."

I ask him for a definition of multimedia and he barely hesitates, "I have my stock definition that I give in classes. How I define multimedia is as essentially a multisensory experience, a multisensory experience that may or may not actually have ■ interactive component to ■ But essentially a multisensory experience in which

MultiMedia & BEYOND

ART, TECHNOLOGY, AND THE VALLEY *continued*

multiple artistic media are woven together into a single unified expression. It's important that there's a certain symbiosis in the integration of these sensory stimuli or sensory media, that they form one complete expression."

Being an intellectual and aesthetic athlete, Packer finds this a little too easy and pat to leave alone. He relates a tale of a classroom discussion of whether film is multimedia when a student, denying the multimedia qualities of film, simply declared that multimedia is "one more medium than we're used to."

Packer didn't buy that definition, explaining, "We're so used to film being a synthesis of sound and image that we don't even think of them as being separate media. They're just like one medium fused together. Whereas if you add film and some other element to it, then it feels like multimedia because it's then one more medium than we're used to. I would say that it is multimedia. I look at multimedia from the broadest possible perspective."

"But I think that the one thing that's really

unique to multimedia as we know it today is the interactivity. That tends to get overemphasized because people don't look enough at the importance of language and the way the media are integrated together, that often gets overlooked. But what's truly unique and different about the medium is the kind of interactivity—because I would say that even movies are interactive. I actually look at movies as being interactive—there's more so, theater is very interactive. But there's a kind of interactivity that's truly unique to this medium—the ability to actually affect, not just the quality of what you're seeing, but the ordering of it, the way it plays out sequentially. You can't do that in a movie, you can't do that in a live performance."

TRIUMPH OF THE ARTISTS IN PHILISTINE VALLEY

When it comes to what he's trying to achieve as director of multimedia at the Museum, Packer is characteristically enthused about the possibilities.

"The first thing is that it needs to be clear to Silicon Valley why we're doing this. Why is it so important for a museum to be high tech? Obviously, because it's almost like the Web was created for museums. It's an ideal medium for museums because not only can you document art, you can use online space as a gallery, and you can create new art for that medium."

He goes on to explain how museums all over the world are embracing the Web by digitizing their collections and putting the resulting databases up on the Web for study. One key advantage of this is that art that is now hidden away in the vaults (the majority of most museums' collections) is available for viewing in some form, even though it is admittedly not quite the same visceral experience as seeing the works up close without technological mediation.

Moving on to what this means for the high-tech industry and society at large, Packer continues, "One of the things I've been trying to explain about this, and this is important to the industry, is that here in this country there is a

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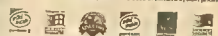
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ART, TECHNOLOGY, AND THE VALLEY

definite lack of cultural resources. There's a lack of appreciation of culture. Schools can't afford to teach art. People are interested in science and technology but arts are really always put in the back seat in our educational system.

"So this is an incredible opportunity to provide an educational resource that's unheard of. It means that kids in schools, kids in libraries, people of all ages, can study art on the Web, can have access to these vast archives of America's and the world's art. What a great contribution that is to making people a little bit more aware and more educated about our culture. It's a tremendous thing."

"I'm saying to people in industry and those companies that are being asked to support the museum, 'You are developing this technology and the power of that technology is the power of access. Why not bring that access to institutions like museums so that it really plays an important role in how people are educated in this country about culture, which is of the utmost importance?' Companies in Silicon Valley that support museums can really affect our country in a dramatic way, affect our children, affect our knowledge of culture dramatically. I think it's almost a no-brainer in terms of the effectiveness of supporting institutions that are set up to educate society about culture and about intellectual content."

I point out that there are some interesting ironies in seeking this kind of support from corporations busy changing the working landscape as fast with their products that we might reasonably ask who needs to know about anything old such as Renaissance painting, film of the '30s, or any other cultural artifacts from any time prior to the '70s, from corporations that with and large have to pay taxes on a state where the electorate long ago decided to gut the educational system.

We're living in a time when school libraries struggle to survive and to provide basic information about biological functions, let alone espouse any sense of cultural literacy; we're living in a time when a few right-wing politicians have essentially killed what cultural programs there were in order to shove their bigotry down all our throats. We're living in a society where the populace has not only allowed these things to happen but often supports these retrogressive policies, albeit from positions of self-induced ignorance or conceptual coercion and distortion by the media. Silicon Valley's general tendencies are towards libertarian and free market attitudes that, although some effort is made to obscure the fact, are actually closely allied with the forces that have brought us to this sorry state of affairs.

Even the optimist and the diplomat, Packard only allows, "It's ironic that the industry is embracing the technology that is so powerfully enabling and at the same time the institutions that are responsible for distributing the content can barely survive. So if we can just put the two together I think we can work with each other. Museums educate, Silicon Valley companies make the technology that's now bringing this whole new level of access. If we work together we can each do what it is that we do in our role and change, absolutely change, the quality of education in this country."

Besides providing opportunities for education about the art of the past, Packard intends for the Multimedia Center to provide online space for new contemporary—specifically online and electronic—art projects in association with technology companies. "I've always dreamed of commissioning major artists together with labs on their campus facilities," he explains. "A Robert Rauschenberg or a Jenny Holzer could collaborate with engineers in creating new art that is then exhibited in museums."

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ART, TECHNOLOGY, AND THE VALLEY continued from page 158

"This is a fantasy of mine. I don't know why it has to be a fantasy. In Japan they're doing that NTT, the phone company in Japan, has set up a laboratory, ICC, where they're inviting artists to come and create experimental, avant garde new art, interactive art that's not necessarily trying to be accessible or easy. Some of it is very challenging, some of it's very difficult, some of it's weak, some of it's strong. They're supporting it because it's an emerging medium; it's the future."

THE BOTTOM LINE

Not being an optimist or a diplomat, I argue that this is a difference of cultural attitude between Japan and the United States—that art is not considered useful by people who are in the business of selling things and that selling things is what this country has disproportionately become about.

Art, on the other hand, is about immaterial concepts, and often is only one piece; it's not mass-manufactured. In this high-tech industry in particular, there is a great emphasis on maximizing short-term profit whatever the long-term or side effects—what economists call "externalities."

I remind Packer that Scott Fisher, in his lecture on virtual reality at the Museum, had pointed out that in Europe questions about the effects of his work were frequently asked, while in the Valley they don't get asked at all. Artists tend to make people think and ask questions, particularly if the populace is trained to appreciate art on that level. I claim that these things are very contrary to the interests that Silicon Valley holds in heart. I suggest to Packer, "In a sense you're trying to be an irritant to the industry, in the sense of getting their attention and asking them..."

For obvious reasons, I don't get to finish my sentence.

"I don't know if I would say irritant," Packer says, "but I would say that I'm trying for the Museum to be some degree a mirror, not even a mirror..."

"A stimulant?" I try again.

"No."

"You're trying to distract them from their purpose of making money into thinking about what they're doing."

Packer is now uneasy. "Yeah," he hesitates, "because they have to."

"They have to?" I ask. "Under the current economic system why do they have to? They're just trying to make the next quarter's earnings."

"Because ultimately we all have to care about what we do and how it affects the rest of the world and the planet and the human condition. If we don't care about those things then the world will just go to pieces," Packer waxes philosophic.

I simply can't resist. "There are plenty of people who think the world is going to pieces precisely because of this technology!"

"Well, maybe then I'm trying to save the world—don't put that in there."

Sorry, Randall, it's too late to stop now. However, I charitably point out to him, "You're not defending the industry—that's not your job."

"I feel like my job is fundamentally to be an evangelist for technology as a tool and as a medium for art making," Packer sighs with relief. "As an artist myself, I feel like I make my own contri-

Randall Packer: "There's a kind of interactivity that's truly unique to this medium—the ability to actually affect, not just the quality of what you're seeing, but the ordering of it, the way it plays out sequentially. You can't do that in a movie; you can't do that in a live performance."

tribution to this body of work as I were, but I've always been interested in education. The museum is a place where education and the arts come together. I feel like what I can do is my small part in making sure that someone is addressing these issues within the context of the museum where it needs to be addressed."

When it comes to the bottom-line issues of the value of art to the industry, Packer regains his composure and expounds once more in his vigorous way. "They just have to use a little bit more of their imagination because I personally believe that if you look at things from a very bottom-line perspective, it's very difficult to see the value of experimental media. If you're a little bit more visionary in your thinking and you're looking further down the road, you see the connection between ideas that artists are dealing with in their work and the technologies that you're creating that are revolutionary in and of themselves."

"If you're forward-thinking enough to see the connection between artistic invention and scientific invention, then supporting that has tremendous value. I just don't think that indus-

try in this country is forward-thinking enough to make that connection. Whereas in Europe and in Asia they do see the connection; they do see the value in supporting new art and experimental art for that matter. But it's all a matter of education, and the reason why this situation exists is because we have lousy arts education in this country. Most people who work in Silicon Valley have not been properly educated in the arts, how can people in Silicon Valley make the connection between artistic invention and scientific invention? That's where the Museum again comes into play."

Finding the gist of his argument again, Packer returns to discussing the Alternating Currents exhibition and the Interactive Timeline. "What are the themes that have been critical to artists who have been working with technology over the past 40 years—before computers were being used for art making? I think the most important thing

about that exhibition is that in bringing out those themes—message and narrative, the perceptual relationship that we have with technology, how it alters our perception of the world—better equips us for experiencing computer and more contemporary use of technology."

"Fundamentally, it brings to the surface what the really key issues are in experiencing any kind of art,

and technology in this case. If the show had just dealt with computers, maybe it would have given us a look at what artists are doing today or in the past several decades with computers, but it may not have explored as well some of the fundamental experiences that need to be addressed in terms of our understanding of multimedia and more contemporary computer art."

"I think that the exhibition does a tremendous job of preparing us for better understanding of what's going on in the world around us right now. What's in the Museum is the perfect way of providing the foundation for our audience how to understand the art of the 21st century." Copyright © 1998 by Jonathan E. All rights reserved.

RESOURCES:

San Jose Museum Of Art
URL: <http://www.sjmusart.org>

Randall Packer
URL: <http://www.zakros.com>

MultiMedia & BEYOND

Technology, Culture, And Art

The San Jose Museum Of Art Meets
The Art Of Multimedia

O the Gotham City of agrarian Northern California, the city of San Jose, phoenix-like, has captured national attention for the renewed vigor of its civic planning and its robust growth. Today its crops are chips and bits as it confidently shoulders the leadership of being Silicon Valley's regional capital.

Appropriately enough, the San Jose Museum of Art has emerged as a shining avatar of how art and technology can conjoin into a higher synthesis.

ALTERNATING CURRENTS: AMERICAN ART IN THE AGE OF TECHNOLOGY

The City and the Museum have a substantial commitment to provide great art in a museum



that historically never had much of a permanent collection. More than \$4 million has been invested in a collaboration with New York's Whitney

Museum for four exhibitions, over eight years, of great contemporary American art from 1900 to the 1990s. The result has been nothing less than world-class art right here in San Jose.

The fourth and final installment, "Alternating Currents American Art In The Age of Technology," and its collateral elements, the "Multimedia Timeline and the Online Tour," will be up until October 1998. With restoration of the Historic Wing complete, yielding a well-designed cafe and gift shop/bookstore, this marks an exemplary commitment to mul-

timedia and digital art. Born in San Jose, Randall Packer was director of the Multimedia Studies Program at San

MultiMedia & BEYOND

SAN JOSE MUSEUM OF ART *continued*

Francisco State University in 1995 and 1996. While there he authored one of the courses (as did I) for the MSP's short-lived Online Curriculum. He currently serves as the faculty of the Department of Art Practice at UC Berkeley, alternating between teaching courses in The History of Multimedia and Interdisciplinary Digital Production.

Packer was invited to participate as a consultant on a committee that was advising the museum on the Alternating Currents exhibition's collateral activities. As the Museum's first director of multimedia, he was hired to create a new Multimedia Department which would oversee the development of the Multimedia Center, the installation of the network, and to build a state-of-the-art infrastructure that would support all of the Museum's multimedia activities.

INTERACTIVE TIMELINE

Packer oversaw and directed the design and production of the Multimedia Timeline and the Online Tour of Alternating Currents. "A lot of this grew out of the work I have done in research and teaching the courses on the History of Multimedia," he says.

For planning the Multimedia Timeline, three curators took charge of three parallel paths. The curator from the Whitney, Beth Venn, took the art; the curator from San Jose, Cathy Kimball, took the culture; and Packer took the technology paths for the four decades—the 1960s, 1970s, 1980s and 1990s.

After collaborating and compiling the choices, they confirmed 120 events that were arrayed in the Multimedia Timeline wall, with sixty of them displayed on four computer monitors inset in the wall, each monitor supporting one of the paths. Packer says, "The central theme is the development of the personal computer in Silicon Valley, especially in the post-Macintosh era where artists and engineers have really intersected in making possible the supporting use of the personal computer."

He oversaw the production team with designers Jan Ekenberg and Jaime Garcia-Alvarado. They digitized the imagery and used a Radius card with Adobe Premiere to capture all the video clips, SoundEdit 16, Macromedia Director for authoring, Photoshop



The San Jose Museum of Art's Web site points to the future of art exhibition online.

and some Illustrator for all the graphic production. The wall text and the multimedia elements are integrated to provide a continuity for the sweeping changes that have raced through these forty years.

In front of each screen is a podium with a mouse and a set of headphones. In this interactive exhibit, each screen has a mosaic of fifteen images of the key artistic, cultural and technology milestones of that decade. Select any image and it enlarges to a new full-screen graphic with explanatory text and with a small screen that is a video clip that you can play by clicking on it.

In this unique interactive context it is not just déjà vu to M.L. King, JFK, Woodstock and disco. Most of the video clips are excerpts from documentaries and TV news, and many are riveting. Burning Man fans will feel a glow as they see the predecessors of that artistic tradition in Jean Tinguely's self-destructing machine, Art Farm's kamikaze

Cadillac smashing through the wall of burning TVs, and Survival Research's robotic Armageddon. The ability to see a performance by Laurie Anderson in one decade, and then her Puppet Motel CD-ROM in another, provides one of those envied links that this exhibit does so well.

ALL HANDS ON TECH

You can walk right into the Kids Interactive Lab, located in the Historic Wing, whether you are a kid or not. Or, for a little while, you can become a kid again, and a very "hands on" at that.

Designed to complement and facilitate awareness of all the science-fair wonder of the Alternating Currents exhibition, it is a cheery industrial-strength workshop that encourages access, understanding and exploration. There are Macs and PCs and a fixed digital camera that makes it easy to get a mug shot that can be digitally diddled on the computer. You can walk through the Web and go on to try out several pre-loaded creative applications. A big worktable holds a full array of analog tools like paper, crayons and scissors.

They have just opened the Multimedia Lab, an in-house production space, that will be used for the creation of future media projects. Now it is being used for the development and maintenance of the Museum's Web site. So far there is one Macintosh 8600, a scanner with slide adapter, a color printer and a Sony digital camera. In the months to come, this space will grow and diversify to provide a broadening range of media support needs.

The Multimedia Center is scheduled to open in spring of 1999 and will provide all kinds of programs and resources—events, presentations, workshops, videoconferencing and guest artists. This facility will have a heavy networking component, with several servers all running off of the high-speed local area network, probably T1 or better with 100-megabit bandwidth, supporting CD-quality audio, video and VR.

Computers will provide visitors with access to exhibitions and catalogs of digitized art work as well as Web site-specific work. Some portions of those resources will be accessible from the Museum's Web site. At the moment the program is being hosted by San Jose-based

MultiMedia & BEYOND

SAN JOSE MUSEUM OF ART *continued from page 100*

AboveNet, who has donated bandwidth to the Museum. Packer explains, "We have developed a partnership with AboveNet so that as the museum's information needs grow they will be able to supply ■ with the bandwidth that we need."



ONLINE GUIDED TOUR

If you surf the museum Web sites of the world you will find ■ wide variety of exhibition information, ranging from simple text listings to near-virtual representations, such ■ can be found in the Fine Arts Museums of San Francisco's pages (<http://www.thinker.org>). The San Jose Museum of Art's site features ■ guided tour of the Alternating Currents show that provides ■ complete map of the gallery experience. For those who cannot reach the Museum, it offers the next best thing. For those of you who are planning to visit, it gives ■ preview. For scholars and past visitors, here's where you can look up answers to questions and to review what you saw.

The Online Tour follows the same three themes/three rooms continuity, which ■ also reflected in the optional on-site audio tour of the exhibit floor for analog visitors. If you choose the Guided Tour, it will step you through the entire Web tour ■ the same continuity as the audio tour.

With Packer's oversight, Jaime Garcia-Alvarado produced the Online Tour using NetObjects for authoring. The RealAudio encoder ■ employed to convert the audiocassette-based audio to digitized ■ compressed data for RealAudio streaming, so that

you can listen to those comments ■ you step along the Web tour. All the wall text in the exhibit is posted on the pages of the Web site, along with many of the images viewable in two screen sizes. The San Jose Museum of Art's Web site points ■ the future direction of ■ exhibition online ■

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RESOURCES:

San Jose Museum of Art
110 South Market St. (at San Fernando)
San Jose, CA 95113-2383
(408)294-2787
<http://www.sjmusart.org/>
AboveNet
<http://www.above.net>

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STEP ONE: PICK A SYSTEM. ☐ PC COMPATIBLE ☐ MACINTOSH ☐ NAME BRAND ☐ NETWORK WORKSTATION ☐ COMPATIBLES ☐ NO PREFERENCE

Quantity / Choices ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 or more ☐ My Budget For System is: ☐ Under \$1000 ☐ \$1000 to \$1999 ☐ \$2000 to \$2999 ☐ \$3000 to \$3999 ☐ \$4000 to \$4999 ☐ Over \$5000

STEP TWO: SYSTEM CONFIGURATION: ☐ INTEL ☐ PENTIUM ☐ PENTIUM MMX ☐ PENTIUM PRO ☐ PENTIUM II ☐ DUAL ☐ CYRIX

CPU MHz & SPEED: ☐ 5688 ☐ 6X88 ☐ K-6 ☐ Quadra ☐ PowerPC ☐ BUS TYPE: ☐ PCI ☐ VLB ☐ CACHE: ☐ 64K ☐ 128K

RAM: ☐ 266 ☐ 233 ☐ 200 ☐ 180 ☐ 166 ☐ 150 ☐ 133 ☐ 120 ☐ 100 ☐ 128MB ☐ 256MB ☐ 512KB ☐ 1GB ☐ 2GB ☐ 4GB ☐ 8GB

HARD DISK DRIVE: ☐ IDE ☐ SCSI ☐ ZIP DR ☐ JAZZ ☐ 2GB+ ☐ 3GB+ ☐ 4GB+ ☐ 8GB+ ☐ MONITOR: ☐ SVGA ☐ VGA ☐ MONO ☐ 26 DPI ☐ 14" ☐ 15" ☐ 17" ☐ Non Interface ☐ 28 DPI

FLOPPY DRIVE: ☐ 1.44MB ☐ 3.5" ☐ 5.25" ☐ 8" ☐ 10" ☐ 12" ☐ 14" ☐ 16" ☐ 18" ☐ 20" ☐ 22" ☐ 24" ☐ 26" ☐ 28" ☐ 30" ☐ 32" ☐ 34" ☐ 36" ☐ 38" ☐ 40" ☐ 42" ☐ 44" ☐ 46" ☐ 48" ☐ 50" ☐ 52" ☐ 54" ☐ 56" ☐ 58" ☐ 60" ☐ 62" ☐ 64" ☐ 66" ☐ 68" ☐ 70" ☐ 72" ☐ 74" ☐ 76" ☐ 78" ☐ 80" ☐ 82" ☐ 84" ☐ 86" ☐ 88" ☐ 90" ☐ 92" ☐ 94" ☐ 96" ☐ 98" ☐ 100"

POINTING INPUT DEVICES: ☐ Any Mouse ☐ MS Mouse ☐ Keyboard ☐ Joystick ☐ Ball Point ☐ Pen ☐ OPERATING SYSTEM NEEDED: ☐ Windows 95 ☐ OS/2 Warp ☐ Win NT ☐ Mac ☐ UNIX ☐ DOS/Windows 3.11

STEP THREE: MULTIMEDIA UPGRADE ☐ Please ☐ To Step 1 & 2 Quotation ☐ Please Quote Me Separately

CD ROM DRIVE: ☐ Internal ☐ External ☐ IDE ☐ SCSI ☐ ZIP DR ☐ JAZZ ☐ 2GB+ ☐ 3GB+ ☐ 4GB+ ☐ 8GB+ ☐ MONITOR: ☐ SVGA ☐ VGA ☐ MONO ☐ 26 DPI ☐ 14" ☐ 15" ☐ 17" ☐ Non Interface ☐ 28 DPI

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STEP FOUR: HOW DO YOU WANT IT? ☐ BRAND NAME ☐ No Brand Name Preference ☐ SOUND CARD ☐ SPEAKERS ☐ DOCKING STATION ☐ EXTRA BATTERY

SCREEN TYPE: ☐ 10" ☐ 11" ☐ 12" ☐ 13" ☐ 14" ☐ 15" ☐ 16" ☐ 17" ☐ 18" ☐ 19" ☐ 20" ☐ 21" ☐ 22" ☐ 23" ☐ 24" ☐ 25" ☐ 26" ☐ 27" ☐ 28" ☐ 29" ☐ 30" ☐ 31" ☐ 32" ☐ 33" ☐ 34" ☐ 35" ☐ 36" ☐ 37" ☐ 38" ☐ 39" ☐ 40" ☐ 41" ☐ 42" ☐ 43" ☐ 44" ☐ 45" ☐ 46" ☐ 47" ☐ 48" ☐ 49" ☐ 50" ☐ 51" ☐ 52" ☐ 53" ☐ 54" ☐ 55" ☐ 56" ☐ 57" ☐ 58" ☐ 59" ☐ 60" ☐ 61" ☐ 62" ☐ 63" ☐ 64" ☐ 65" ☐ 66" ☐ 67" ☐ 68" ☐ 69" ☐ 70" ☐ 71" ☐ 72" ☐ 73" ☐ 74" ☐ 75" ☐ 76" ☐ 77" ☐ 78" ☐ 79" ☐ 80" ☐ 81" ☐ 82" ☐ 83" ☐ 84" ☐ 85" ☐ 86" ☐ 87" ☐ 88" ☐ 89" ☐ 90" ☐ 91" ☐ 92" ☐ 93" ☐ 94" ☐ 95" ☐ 96" ☐ 97" ☐ 98" ☐ 99" ☐ 100"

STEP FIVE: NETWORKING NEEDS: ☐ Please Contact Me On My Networking ☐ Indicated Below ☐ Software ☐ Hardware ☐ Consultation ☐ Design ☐ Installation ☐ Administration ☐ MS Workgroups ☐ Novell ☐ NT ☐ Users 2 to 10 ☐ Users 10 to 50 ☐ Users Over 50 ☐ Lan/Net ☐ Apple Talk ☐ Digiliter ☐ Laser Printer ☐ Color Printer ☐ Matrix Printer ☐ Flat Bed ☐ Hand Scanner

STEP SIX: UPGRADES & PERIPHERALS: ☐ Ink Jet Printer ☐ Tape Backup ☐ Accelerator ☐ Digitizer ☐ Laser Printer ☐ Color Printer ☐ Matrix Printer ☐ Flat Bed ☐ Hand Scanner

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Resources

Calendar of Events

Conferences, Shows, Special Events

January

January 24 Computer Super Shows. Riverside Convention Center. Super Show Productions. Contact: (714)838-5941.

January 25 ACP Computer Swap Meet. Santa Ana. ACP Superstore. Contact: (714)558-8813.

January 27-28 SENET Career Expo. LAX Hilton Hotel, Los Angeles. SENET Career Expo. Contact: (626)336-8306, or URL: <http://www.senetcareer.com>.

February

February 7-8 American Mega Computer Shows. CSU, Northridge. American Mega Shows. Contact: (626)961-3782 or URL: <http://www.megashow.com>

February 9-13 Software Development '98. San Francisco. Miller Freeman. Contact: (818)21-6722. URL: <http://www.sd98.com>.

February 14 Computer Super Shows. Glendale Civic Auditorium. Super Show Productions. Contact: (714)838-5941.

February 15 MarketPro Computer Show & Sales. Scottish Rite Center, San Diego. MarketPro Shows. Contact: 1-800-708-7555 URL: <http://marketpro.com>.

February 15 Computer Super Shows. Riverside Convention Center. Super Show Productions. Contact: (714)838-5941.

February 15 American Mega Computer Shows. Carson Civic Center, Carson. American Mega Shows. Contact: (626)961-3782 URL: <http://www.megashow.com>.

February 18-20 Mobile PDA Expo. San Francisco. PDA Inc. Contact: (415)252-8008, info@umsfild.com, URL: <http://www.pda-expo.com>.

February 21-22 Computer Super Shows. Orange County Fairgrounds. Super Show Productions. Contact: (714)838-5941.

FEBRUARY 7-8

Computer Fair

POMONA

Produced by National Productions, Inc., for over fourteen years, Computer Fair covers 100,000 square feet with over 300 exhibits featuring multimedia systems, notebook computers, software titles, modems, and other peripherals ■ discount pricing. Free prize giveaways every hour. Open 10-5 pm, admission \$8. For more information, call 1-800-800-5600, CMPlst@aol.com, or URL: <http://www.lacomputerfair.com>.

MARCH 3-5

Computer Telephony Conference And Exposition '98

LOS ANGELES

As the benefits of IP-based telephony, call centers and intranet applications are becoming more apparent, CT Expo '98 promises to draw the major players in computer telephony to one, concentrated place where the top makers and technology partners from Dialogic, Hewlett Packard, Natural Microsystems, Sun Microsystems and others will demonstrate their new wares. CT Expo has traditionally been the place ■ see the latest and greatest in board-level and system-level technology as well as the place for the hottest tools, applications and services ■ computer telephony. For more information, call (215)355-2886 or URL: <http://www.ctexpo.com>.

February 21-22 American Mega Computer Shows. CSU, Northridge. American Mega Shows. Contact: (626)961-3782 or URL: <http://www.megashow.com>.

February 21-22 MarketPro Computer Show & Sales. Ventura Fairgrounds, Ventura. MarketPro Shows. Contact: 1-800-708-7555 or URL: <http://marketpro.com>.

February 25-26 SENET Career Expo. Disneyland Hotel, Anaheim. SENET Career Expo. Contact: (626)336-8306, or URL: <http://www.senetcareer.com>.

February 26-27 Java Seminar. Los Angeles. Contact: (212)242-7447, Fax: (212)242-7574, or URL: <http://www.sigs.com/conferences/javaseminars/>.

March

March 1 MarketPro Computer Show & Sales. Scottish Rite Center, San Diego. MarketPro Shows. Contact: 1-800-708-7555 or URL: <http://marketpro.com>.

March 3-5 Computer Telephony Conference and Exposition '98. Los Angeles. Contact: (215)355-2886, URL: <http://www.ctexpo.com>.

March 4-5 SENET Career Expo. San Diego Convention Center, San Diego. SENET Career Expo. Contact: (626)336-8306, or URL: <http://www.senetcareer.com>.

March 8 American Mega Computer Shows. CSU, Northridge. American Mega Shows. Contact: (626)961-3782 or URL: <http://www.megashow.com>.

March 15 American Mega Computer Shows. Pasadena Convention Center. American Mega Shows. Contact: (626)961-3782 or URL: <http://www.megashow.com>.

March 29 ACP Computer Swap Meet. Santa Ana. ACP Superstore. Contact: (714)558-8813.

April

April 21-22 SENET Career Expo. Los Angeles Airport Hilton Hotel, Los Angeles. SENET Career Expo. Contact: (626)336-8306, or URL: <http://www.senetcareer.com>.

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February 14
Saturday

SANTA BARBARA

Earl Warren Showgrounds
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February 21 & 22
Saturday & Sunday

LAS VEGAS

Eastern Plaza
2601 South Eastern Avenue, one block south of Sahara Avenue

Feb. 28 & March 1
Saturday & Sunday

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LaserWriter 16/800PS \$385
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Resources

Calendar Of Events *continued*

April 27-29 Internet ■ Electronic Commerce Conference and Exposition (IEC). New York, NY. Gartner Group Contact: (203)236-4700, iec@expocon.com, or URL: <http://www.expocon.com>

Classes, Seminars, Workshops

January

January 27 Before You Buy A Mac Class. Santa Monica LAMG Contact: (310)319-1821, lamg@lamg.org, or URL: <http://www.lamg.org>

January 27-30 Developing A Web Site. Costa Mesa Learning Tree International. Contact: 1-800-THE-TREE, or URL: <http://www.learningtree.com>

January 27-30 Hands-On Java Programming. Los Angeles Learning Tree International. Contact: 1-800-THE-TREE, or URL: <http://www.learningtree.com>

January 27-30 Objects, Relations, and Object/Relational Databases. Los Angeles UCLA Extension. Contact: (310)825-3344, mhennes@unex.ucla.edu, or URL: <http://www.unex.ucla.edu/shortcourses>

January 28 Finding A Job Using The Internet. Santa Monica LAMG Contact: (310)319-1821, lamg@lamg.org, or URL: <http://www.lamg.org>

January 28-29 Hands-On Inter-Adv. Photoshop Class. Santa Monica LAMG Contact: (310)319-1821, lamg@lamg.org, or URL: <http://www.lamg.org>

January 31 Hands-On Preparing Web Graphics Class. Santa Monica LAMG Contact: (310)319-1821, lamg@lamg.org, or URL: <http://www.lamg.org>

January 31 Beginning Mac Class. Santa Monica LAMG Contact: (310)319-1821, lamg@lamg.org, or URL: <http://www.lamg.org>

January 31 Photoshop Power Class. Santa Monica LAMG Contact: (310)319-1821, lamg@lamg.org, or URL: <http://www.lamg.org>

January 31-April 24 Client/Server Computing with Oracle. Fullerton Cal State Fullerton Extension. Contact: (714)278-2611

January 31-April 4 Client/Server Computing with SQL Server. Fullerton Cal State Fullerton Extension. Contact: (714)278-2611

January 31-February 28 Microsoft Excel 97, Part I. Fullerton Cal State Fullerton Extension. Contact: (714)278-2611

January 31-March 21 Beginning Adobe Premiere for Non-linear Video Editing. Fullerton Cal State Fullerton Extension. Contact: (714)278-2611

January 31-March 21 Fundamentals of Authoring with Macromedia Director. Fullerton Cal State Fullerton Extension. Contact: (714)278-2611

February

February 1-May 3 Introduction ■ Powerbuilder. Fullerton Cal State Fullerton Extension. Contact: (714)278-2611

February 2-23 SQL Programming. Fullerton Cal State Fullerton Extension. Contact: (714)278-2611

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- Feb. 14th Sat. **\$5. GLENDALE CIVIC AUDITORIUM (City of Glendale)**
1401 N. Verdugo Rd. Hwy to Mountain, then Road to Corner of N. Verdugo
- Feb. 15th Sat. **\$5. RIVERSIDE CONVENTION CENTER (Riverside)**
3443 Orange St. Hwy to University, Westbound to Orange
- Feb. 21-22 Sat/Sun **\$5. ORANGE COUNTY FAIRGROUNDS (Costa Mesa)**
88 Fair Drive, 25 Hwy to Fair Drive, Rt. 91 Fair Drive and Follow The Signs

MARCH 1998

Visit Our Web Site at <http://www.supershowprod.com>
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- Mar. 7th Sat. **\$5. SAN BERNARDINO NATIONAL ORANGE SHOW FAIRGROUNDS**
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- Mar. 14th Sat. **\$5. GLENDALE CIVIC AUDITORIUM (City of Glendale)**
1401 N. Verdugo Rd. Hwy to Mountain, then Road to Corner of N. Verdugo
- Mar. 15th Sun. **\$5. RIVERSIDE CONVENTION CENTER (Riverside)**
3443 Orange St. Hwy to University, Westbound to Orange
- Mar. 21-22 Sat/Sun **\$5. ORANGE COUNTY FAIRGROUNDS (Costa Mesa)**
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Resources

Calendar Of Events *continued from page 212*

February 2-5 Data Mining Techniques and Applications. Los Angeles. UCLA Extension. Contact: (310)825-3344, mhenness@unex.ucla.edu, or URL: <http://www.unex.ucla.edu/shortcourses>.

February 2-February 11 Beginning Adobe Illustrator. Fullerton. Cal State Fullerton Extension. Contact: (714)278-2611.

February 3-April 14 Fundamentals of C Programming Language. Fullerton. Cal State Fullerton Extension. Contact: (714)278-2611.

February 3-April 7 Fundamentals of C++. Fullerton. Cal State Fullerton Extension. Contact: (714)278-2611.

February 3-May 12 Introduction for Client/Server Computing. Fullerton. Cal State Fullerton Extension. Contact: (714)278-2611.

February 5-May 21 Fundamentals of UNIX. Fullerton. Cal State Fullerton Extension. Contact: (714)278-2611.

February 5-May 21 Design of UNIX Operating System. Fullerton. Cal State Fullerton Extension. Contact: (714)278-2611.

February 6-May 11 Introduction to Visual Basic. Fullerton. Cal State Fullerton Extension. Contact: (714)278-2611.

February 7-March 21 Web Page Development. Fullerton. Cal State Fullerton Extension. Contact: (714)278-2611.

February 9-10 Internet Multicast and Multimedia Technologies: The Mbone, Multicast Routing, RTP and RSVP. Los Angeles. UCLA Extension. Contact: (310)825-3344, mhenness@unex.ucla.edu, or URL: <http://www.unex.ucla.edu/shortcourses>.

February 9-March 30 Client/Server Systems Analysis and Design. Fullerton. Cal State Fullerton Extension. Contact: (714)278-2611.

February 14 Oracle & Oracle Financials Class. Bellflower. Computer Resolutions. Contact: (562)804-0470, or URL: <http://www.computer-resolutions.com>.

February 23-April 27 UNIX Utilities for Systems Programmers. Fullerton. Cal State Fullerton Extension. Contact: (714)278-2611.

March

March 1-22 Microsoft Word 97, Part I. Fullerton. Cal State Fullerton Extension. Contact: (714)278-2611.

March 9-18 Advanced Adobe Illustrator. Fullerton. Cal State Fullerton Extension. Contact: (714)278-2611.

March 10-13 Remote Sensing Data Analysis, Visualization and Animation. Los Angeles. UCLA Extension. Contact: (310)825-3344, mhenness@unex.ucla.edu, or URL: <http://www.unex.ucla.edu/shortcourses>.

March 14 Oracle & Oracle Financials Class. Bellflower. Computer Resolutions. Contact: (562)804-0470, or URL: <http://www.computer-resolutions.com>.

March 14-April 4 Microsoft Access 97, Part 2. Fullerton. Cal State Fullerton Extension. Contact: (714)278-2611.

March 23-30 Find It On The Internet. Fullerton. Cal State Fullerton Extension. Contact: (714)278-2611. ■

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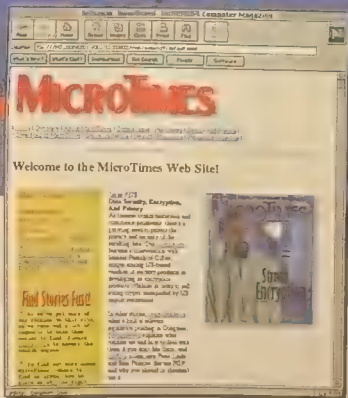
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Resources

User Group Network

BULLETIN BOARDS

MULTIZONE

AcWeb Network. Multizone (818)931-0397, 782-3559, 240-6356, (805)257-1690 (213)555-1603, (310) 470-6275. URL: <http://www.acweb.net>. Internet access, PPP, chat, files, TradeWars, MUD, MatchMaker, forums, 500 CDs, 10MB Web site included, free trial period [Exp.#18].

CoJoe Break BBS. Multizone (310)425-5710, 320-5000; (714)670-6500, 572-8800, 537-4300, 262-1200, 797-6400. General interest, 20 lines, chat, MajorJedi, WWW, Ultimate caffeine buzz Symp Coffee. [Exp.#176].

Hot California. Multizone (562)407-1300, 507-1321; (310)407-1321; (714)649-9051, 702-0450, 768-3318, 905-3966, (818)585-1974, 702-8708, 444-6560, 783-4316, 842-9275, (909)824-0745. Telnet: kinyo.com. 16 hrs., up 33,600 MUD:1.0. Areas: Game Connection, full Internet access, free trial [Exp.#176].

Miller's Party Board. Multizone (213)569-9191, 727-0251, (310)815-0117, 721-3469, (562)425-7264, 929-3840, (860)577-5880, 961-2458, (714)220-0897, 537-4436, (818)240-8296, 769-2302, 862-0142.

MajorJedi. TradeWars 2002, full Internet access, forums, Seven-Day Free Trial, Jack Stern. [Exp.#176].

Twilight Hills BBS. (805)575-5000, (714)730-9242, 774-6146, 24 hrs., 14,400-28,800. Multizone BBS, chat, forums, 16 and 28 line chat, up on Symp Anthony L. Mayer. [Exp.#176].

Westside, Multizone (313) 516-4444, (310)484-1077, (562)354-9351, (626)723-4444, (714)957-4571, (909) 526-2395, (818)999-6557, (909)340-2318. Games, chat, email, meets, Moral Free 14-day trial [Exp.#177].

310

Los Angeles Macintosh Group BBS. (310)451-LAMB, 8-N-1, 24 hrs. FirstClass, 16 lines, 40,000 calls/month. Shareware, forums include DTP, multimedia, WWW, employment exchange, classifieds, more [Exp.#176].

South Bay Apple Mail User Group BBS. (310)792-8083 FirstClass. Large library, multiple conferences. URL: <http://www.stabug.org>. [Exp.#176].

Turbo Time BBS. (310) 642-7518 8-N-1, 24 hrs., 300-14,400. Full graphical interface. Come join the changed! Files, messages, more. Free Symp. Michael. [Exp.#176].

562

Roshidokai BBS. (562)690-8719 8-N-1, 24 hrs., 33,600. ANSI/RIP, subs, files, games, multi-line/real-worlds. Free WWW v4.24. Log on as "guest." [Exp.#176].

Datcom Online Dating Service. (562)799-6191 9600-28,000. Photo personal, chat, forums, [Exp.#176].

Telery. (562)494-0809, Telnet: telery.com. URL: <http://www.telery.com>. Chat, forums, LORD Invicta, the Internet email, chat, Symp, Cobra & LUS. [Exp.#179].

626

Tele-Link Online. (626) 900-5000 8-N-1, 24 hrs., 33,600. Free, 16 and 28 line chat, up on Symp. [Exp.#176].

Bob DeForge. [Exp.#178].
Better Hall BBS. (626) 918-5757, 918-1719, 931-2432, 24 hrs., 28,800-33,600. Over 100,000 files, INTERBBS games, 20.1 ratio after call-back verification. No fee. Symp. Ron Cohen. [Exp.#175].

714

Social Injustice. (714)564-0319 28,800. Games, files, messages, more. Free access Symp. William Haworth. [Exp.#178].

The Abyss BBS. (714)848-84-N-1, 24 hrs. 300-33,600. Message bases, free echos, message, online games and more. No fee! Symp. Byte. [Exp.#181].

The Midnight BBS. (714)848-6405 8-N-1, 24 hrs., 2400-33,600. Large chat, full graphical interface, call-back Symp. Mary Strach. [Exp.#176].

The VISA Connection. (714) 454-7751 8-N-1, 24 hrs., up 33,600. Free access, files, games, forums, CD-ROM database. Since 2/84 Symp. Robert Coop. [Exp.#178].

818

Earthquake City BBS. (818)358-3537, URL: <http://members.tripod.com/~eq/citybbs/index.htm>. 8-N-1, 24 hrs. 33,600. Free. All ages. Files, messages, games. Fee for Internet email, 16B online Symp. Steven Libas. [Exp.#176].

Ethereality BBS. (818) 846-6700, 400-33,600. Free user level, chat files, LORD, TV-BRE, Coolest [Exp.#176].

909

Black Hole Sun. (909) 507-9000 8-N-1, 24 hrs., 33,600. Mastering files, MatchMaker with internationally coded games. [Exp.#176].

AMIGA

Amiga-San Gabriel Valley (ATUG). Meetings 3rd Sat., 11 am-4 pm. 1st Southern Baptist Church, 4856 No. Golden West Ave., Temple City. Contact: Steve, (626) 285-6424. [Exp.#179].

ATARI

ATESIG-Atari 8-Bit SIG. 145 Surf Pl., Seal Beach Cooperative user group for model railroad applications. Contact: (562) 430-5433 or d.mcalliste2@genis.com [Exp.#176].

COMMODORE

C-TUG. Meetings 2nd and 4th Sun., 12:00-4:30 pm, 170 S. Olive, Orange for friendship, advice, and Commodore computer.

help. A library of PD disks, monthly newsletters and much more. Contact: Lou Palush, (714)532-1802 [Exp.#176].

Commodore-Apple Helpers of Long Beach. Meetings 2nd Sat., 9:00 am, Community Presbyterian Church, 6380 Orange Ave., North Long Beach. Dues are \$24 and include a bi-monthly publication with two PD disks. Contact: Carol Martin, Comaron@earth.dome.com. [Exp.#176].

IBM AND COMPATIBLES

Greater South Bay PC Users Group. Meetings 2nd Thurs., 7:30 pm, Torrance Recreation Center, behind Torrance main library. Contact: (310)373-3989, or bob.hudak@bbs.com [Exp.#179].

Long Beach IBM PC Mail Compatibles User Group. Meetings 3rd Wed. 7:00 pm, Masonic Temple, 5155 E. Pacific Coast Hwy., Long Beach. We welcome the novice and the experienced. BBS, video library, newsletter, SIGs. Contact: Jim Wells, (310)439-7114 [Exp.#181].

Los Angeles Computer Society. Meetings 2nd Tues., 7:00 pm, Robert Frost Auditorium, Culver City High School, 4601 Elenda St., Culver City. Door prizes, vendor presentations, product review special interest groups. www.internet.earth Contact: (310)471-2726, or URL: <http://lpcsl.com> [Exp.#179].

Is Your Listing Missing?

Free user group and association listings are limited ■ the group's name, meeting information, contact name and phone number, and ■ ten-word description. They will be deleted at six-month intervals to ensure timeliness and accuracy of information.

Free BBS listings are limited to the board's name, phone number, hours, baud rates, parameters, and a ten-word description. Please let our readers know if your BBS is free or requires a fee. Because we have an ongoing problem of boards shutting down without telling us, much to the annoyance of would-be callers and the new phone number's owner alike, we will delete these listings after they've run three months. The notice ■ the end of the listing—Exp. #xxxx—refers to the last issue number it will appear in unless renewed.

You can update or renew your listings at any time. If yours ■ missing, send your listing information to: US Mail should go ■ MicroTimes User Group, 1300 Clay St., Ste 820, Oakland, CA 94612. Faxes are welcome at (510)768-1288. Email can be sent to: cassidy.allen@microtimes.com or MCI MICROTIMES

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USER GROUPS continued...

NOCC (North Orange County Computer Club). Meetings: 1st Sun, 9:00 am, Chapman University, 333 N. Glassell Ave., Orange. Speakers on hardware/software/Internet, 25 SIGs, demonstrations, newsletter, helpline, raffles, conglomeration table, member benefits. Call (714) 998-8030 or URL <http://www.nocc.org> [Exp #176].

Orange County IBM PC Users Group. Meetings: 2nd Tues, 6:30 pm. Speakers, software, newsletter, BBS Open public, all welcome. Contact (714) 980-0580, or orange@prodigy.com [Exp #181].

Pasadena IBM Users Group. Meetings: 1st Wed, 7:00-9:30 pm, 2154 E. Lake Ave., Altadena. Speakers on hardware/software, demonstrations, SIGs, library, newsletter, and Web site. Call Steve Bass, (626) 751-1300, or URL <http://www.pibug.org> [Exp #181].

Saddleback Valley PC Users Group. Meetings: 3rd Sat, 9:00 am, Saddleback College. Margaret Prov. 205 Business Bldg., General Studies Bldg., Vizio Speakers, question answer period, demos, shareware software library. Beginners experience welcome. Contact (714) 582-4623, or jymant@exp175.

Gabriel Valley Technology Users Group. Meetings: Fri, 7:00 pm, Arcadia Park 300, Clitzen's Center, 405 E. Arcadia. Support for Tandy IBM compatibles. Newsletter. Contact Jack Nock, (626) 576-0411, or jack.nock@worldnet.att.net [Exp #181].

Santa Clarita Valley PC Group. Meetings: 2nd Weds, 7:00 pm, Valencia Town Center Community Room, Contact (805) 298-1680 [Exp #179].

Southern California Computer Society. Meetings: 4th Tues, 7:00 pm, Farmers Bank, Rossmore Mall, 12535 Seal Beach Blvd., Los Alamitos. For all interest in compatible computers, newsletter \$20/yr. Contact Don Schmidt, (562) 424-4634 [Exp #176].

Tousand Personal Computer Club (TOPCC). Meetings: 4th Thurs, 6:00 pm, Goebel Senior Center, 1385 E. Janss Rd., Thousand Oaks. Programs on targeted novice expert level of computer knowledge. Contact Harry, (805) 495-8325 or EH, (805) 495-8053 [Exp #179].

Valley Computer Club (VCC). Meetings: 2nd Tues, 7:00 pm, Burbank YMCA, 321 E. Magnolia Blvd., Burbank (wheelchair access). Vendor presentations, SIGs, newsletter. All welcome. Contact Grace Kruda, (818) 842-3707, or valleydpc@net.net, or URL <http://www.pacific.net.net/~burvally> [Exp #175].

INTERNET

Orange County Java User Group. Meetings: 3rd Wed, 6:30 pm, Novell Regional Sales Office, 16101 Von Karmann Ave., #500, Irvine. For Java developers helping Java developers. Contact java@exp175. Developers present. Contact URL <http://redilida.com/> [Exp #175].

MACINTOSH

Champions Of The Mac Proletariat (CHOMP). Meetings: 4th Thurs, 7:00 pm, Bauer Forum, Claremont. McKenna College, Claremont O&A, raffle of useful software, vendor presentations, exchange views, opinions, expertise. Contact Al Seltzer, (809) 626-7784 or AlSeltzer@aol.com or Mitch Cohen, (909) 605-1000, ext. 11, or URL <http://www.chomp.org> [Exp #178].

Los Angeles Macintosh Group (LAMG). Meetings: 4th Thurs, 7:30 pm, Call for location. Vendor presentations, raffle, 25+ SIGs, seminars, BBS, monthly magazine. Guests welcome. Contact (310) 519-1821 or URL <http://www.lamg.org> [Exp #176].

MacWomen Users Group. Meetings: 3rd Sun, 2:00 pm, LAMG Resource Center, Santa Monica. Join for demos, discussion and troubleshooting for the Macintosh Network among fellow Mac-using women in a variety of macwomen@exp176 welcome. Contact Darlene Roker, (213) 874-2211 [Exp #176].

South Bay Apple Mac User Group. Meetings: 1st Wed, 7:30 pm, Knob Hill Community Center, 320 Knob Hill, Redondo Beach. Newsletter, PD library, demos, software raffles. Contact: C.W. Mitchell, (310) 644-3315 [Exp #176].

West Orange County Mac User Group (WOC-MUG). Meetings: 1st Tues, 7:00 pm, Emerson Community Center, 2625 Venice, Long Beach. Vendor and Winery. westorange@exp176

"Friendliest Mac Club Around" features the latest news about Mac, O&A, vendor presentations, demos, raffles, and a newsletter. Call Lynn, (714) 892-8910 [Exp #176].

Whittier Area Macintosh User Group. Meetings: 2nd Sat, 9:30 am, CFF Church, 14322 Telegraph Rd., Whittier. Beginner experienced O&A, demos, raffle, hot disk, SIGs, newsletter. Contact (562) 908-0059 or URL <http://www.geocities.com/SiliconValley/Pines/6042/> [Exp #181].

MISCELLANEOUS

Glendora Seniors Computer Club. Meetings: 2nd and 4th Wed, 1:00 pm, Leleita Senior Center, 133 E. Foothill Blvd., Glendora, CA 91741. Software demonstrations by vendors and members. Open discussions on hardware software. Troubleshooting help. Contact (626) 914-6560 [Exp #175].

NETWORKING

OCNET—Orange County NetWare Users Group. Meetings: 2nd Tues 6:30 pm, Novell, 18101 Von Karmann, 5th floor, Irvine. Specializes in Novell NetWare solutions. Contact (714) 258-7832 [Exp #182].

Orange County Linux Users Group (OCLUG). Meetings: 1st Sat, 7:00 pm. See Web site for location. Supports Linux users solving their hardware/software/networking problems. Contact: Richard Earhart rc@compuserve.com, or URL <http://www.oclug.org> [Exp #175].

Orange County BitWit Gaming Group. Play multiplayer games on a LAN. Date/location to be announced. Contact: Neil,

(714) 840-9011, outlaw@iukline.com [Exp #181].

WINDOWS

Power Graphics User Network (PGUN). Meetings: 1st Tues, 7:30 pm, Glendale Windows-based graphics and publishing applications (CorelDRAW, Ventura Publisher, Picture Tools) and techniques for image editing, Web Design, 3-D, multimedia, etc. Contact Randy Tobin, (818) 955-5830 [Exp #176].

VAHUG—Valley Area Net Users Group. Meetings: 2nd Tues, 6:30 pm, MicroAge, 8120

Barboa Blvd., Van Nuys. Beginner to advanced presentations. O&A SIGs, excellent topics. Contact Jim Webster, (818) 710-1800, jwebster@net.net or URL <http://www.vahug.org> [Exp #178].

WINNERS-WINDOWS users. Meetings: 2nd Sat, 9:00 am, Orange Coast College, Science Bldg., Room #149, 2701 Fairview Rd., Costa Mesa. All Windows covered, mostly speakers, tips and tricks. Software library available. Internet SIG. Everyone welcome. Contact (714) 644-5782 or URL nhpa.members@aol.com members all computerers [Exp #176].

ASSOCIATIONS

AITP—California Southland Association of Information Technology Professionals. 6:30 pm, Gateway Plaza Holiday Inn, 14299 Valley View, La Mirada (I-5 at Valley View exit). Professional association providing new technology, management topics, networking, and education in the Orange County/LA area.

AITP—California Southland Association of Information Technology Professionals. (714) 847-1617 or 645-5950, URL: <http://members.aol.com/calsoudpa>. [Exp #179].

Independent Computer Coexistence Association (ICCA). 6:00 pm, Sportsman's Lodge, 12825 Ventura Blvd., Studio City. An organization promoting profes-

sionalism, expertise, and ethics in the provision of computer services and awareness of the availability of such services by independent professionals. Independent Computer Consultants Association (ICCA) (213) 872-1811 [Exp #178].

Internet Developers Association. 7:00 pm, 21st Fl., 1999 Ave. of the Stars, Century City. Web development, Web design, providers, free presentations, each meeting's Internet Developers Association (310) 397-8854 [Exp #179].

Webmasters' Guild. The country's first professional association of webmasters to establish an OC chapter. siblass@earthlink.net [Exp #179].

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Realizable Fantasies continued from page 38

7. Replace First-To-Invent With First-To-File: Issue a finding that this nation is almost alone in granting monopolies on the basis of first-to-invent, rather on first-to-file. If the patent system is justified and public disclosure has merit, then encourage it by awarding monopolies only on the basis of first-to-file—and disclose.

But, of course, retain the principle that prior art always invalidates a patent.

8. Declare That Useful Intellectual Communications Cannot Be Monopolized: Find that useful output from computer programs, that does not primarily control equipment and is not primarily aesthetic or artistic in nature, is a response from an intellectual process; is thus the concluding part of an algorithmic and logical process; and may be patented than can any other part of the communications processes of the mind.

9. To Promote Continuing Progress, Mandate Cross-Licensing: If you are going to grant monopolies over our algorithmic processes, then at least mandate that we can use them under license from the monopolists. State the irrefutable fact that essentially all software innovation to date, and all investment therein, and all of the nation's global leadership in this field of software, have occurred without the driving force of patent monopolies. Thus, require mandatory cross-licensing of software patents in a manner that permits the patent holder to reap reasonable rewards, but avoids the clear and present danger that software patents destroy national leadership in this important industry, produce inferior products for the public, otherwise impede progress. We suggest mandatory licensing rates not exceeding 1% of licensee's profits, prorated across all cross-licensors for a given product.

10. Provide a Nationally Accessible Prior-Art Collection: Create a public repository of the limited and incomplete prior art that your Office can collect, with at least descriptions copied every Federal Repository Library updated monthly, make it freely available on the Internet, to the public, and technically possible. Facilitate and encourage submissions from all sources, and especially require inclu-

sion of all software produced under any government grant.

If you don't have the resources to do it, then inform Congress that you are unable to perform your assigned functions without endangering national progress.

11. Exercise Much Greater Due Diligence With Regard To Software Patents: The Patent Office simply must perform more rigorous review before it issues software patents. If it insists on granting monopolies on algorithmic intellectual processes, then the Office must become much more than primarily an archivist. Given the chaos and cost you are creating in our industry, you must do much more than simply accept filings, conduct nominal research and then issue a patent, leaving it up to endless threats, defenses and court battles—among those who can afford them—to ascertain which few software patents might be valid, which is too often determined only by the relative wealth of the combatants.

12. Create A Large Public Advisory Body: Encourage and assist the creation of a large advisory commission of volunteers who are technologists—those who produce the nation's progress in this area—not just intellectual-property attorneys. Seek them from a broad spectrum of software publishers, great and small producers, including individuals.

Technical innovators and their management have, basically, two options: They can invest some time and effort in correcting these intellectual-property protection-errors, or they can invest endlessly in documenting and filing defensive software patents, reviewing other's patents for threats against their creativity, and in ever-escalating claims, defenses, ransom payments, depositions and court hearings.

Among other things, ask that the advisory commission participate, from the beginning, in the drafting of any legislation on this matter, proposed by your Office. And request their assistance with needed legislative efforts.

Conclusions

These specific recommendations will require political support to obtain needed congressional action, and this industry has been politically asleep. But continuing software-patent debates are beginning to awaken it—most

especially its innovators. And we certainly have the financial resources, communications tools and tenacity to seek effective redress—as we finally organize and choose to act.

However, the needed congressional action can be greatly facilitated by supportive recommendations from your Office. Please draft them soon—not cloistered inside the Washington Beltway, but with extensive Internet circulation of all drafts and discussion.

Require mandatory cross-licensing of software patents in a manner that permits the patent holders to reap reasonable rewards, but avoids the clear and present danger that software patents will destroy the national leadership in this important industry, produce inferior products for the public, and otherwise impede progress.

But, to best promote the nation's progress reward innovative algorithms, benefit investors enhance the economy, and protect high wage jobs, and permit continuing global leadership—refute software patents.

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News and Views

Letters continued from page 42

including help format files and other documents, and convert them to a unified document language.

Far from closing the Windows operating system to independent developers, standardizing on HTML format file will help them by not requiring special "kits" or procedures to create help and other files. Further, because a standard file format is used, it will no longer be necessary to only use Microsoft utilities to read these common files. Developers will be able to shop for help formatting utilities. Users will be able to replace the help reader with an alternative, perhaps from Netscape.

It is unfortunate that this has become a fight over Microsoft sales practices. I don't doubt that Microsoft plays hardball. Salesmen are generally trained to take every advantage, and given such incentives it is surprising that the law is not broken more often.

But there are sound reasons for including at least an HTML reader into the operating system, and I hope that work goes forward after the dust clears.

Scott A. Moore
Cisco Systems

In Other News:

Africa—More Bandwidth Needed

From Royal Farros's column on the Internet in Africa (#174), I quote: "Everyone is excited about the Internet in Africa. Disclaimer: When I say 'everyone,' I mean 'people involved in the tourist trade.' By definition, these are individuals who have a job and some education, and aren't (actively) involved in a war."

Huh? How long are we (people of African descent) to tolerate and have to deal with such ignorance? Mr. Farros' technical pedigree may be first rate, but his musings in regards to "everyone" in Africa are inexcusable. I think readers would be better served by picking up *Wired* 6.01 and read "Africa Rising" by John Perry Barlow.

Mr. Farros' visit and perceptions of South Africa are representative of South Africa and should not be, in this forum, projected onto the whole of the continent. Sites such as <http://www.ghana.com> are evidence that Africa is not all spear-chucking, un-wired cannibals on the Serengeti as Mr. Farros would have us believe. In fact, I myself regularly correspond with friends in Africa, email who are not in the "tourist industry." They are not in "war," they work, and are educated.

Africa's problems may seem cute when viewed from afar, but for those of us with loved ones on the continent it is not funny to see someone with a large readership poke fun.

Jason Harris

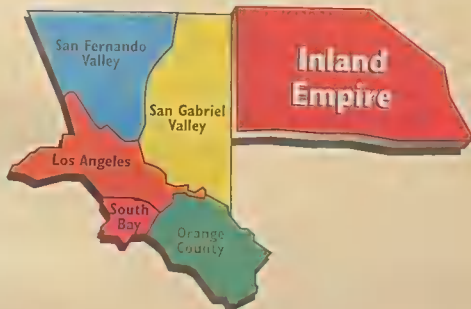
Although it should go without saying that we intended no disrespect or trivialization of Africa's people or complexities, we most sincerely apologize to Mr. Harris and any others who were offended by our ineffectual phrasing.

—ME

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Although it comes with a nice leather case, with a reinforced side to protect the LCD screen, you might want to buy the optional belt clip case (\$25). For those into fashion, there is even a leather Dooney and Burke case (\$50) and Cross writing stylus (from \$30).

If you really want to go all out, a special leather jacket (\$239) is available with a special inside pocket for your PalmPilot!

Although 3Com's Web page provides a sleek way to order accessories, search the Net for places that discount PalmPilot accessories. You might be able to find some serious dough!

3Com did everything right with the PalmPilot. It can quickly become as indispensable as your wristwatch. In fact, it can replace your watch. Sure, it's a lot bulkier, but can your watch do email?

Palm Computing recently announced that paging capabilities will be available to PalmPilot users with a 2MB memory card add-on. Developed by Motorola Inc., the card will provide one-way paging without any size increase. The street price is expected to be under \$200. With Motorola's recent announcement of a two-way paging device, it would seem like it's natural to also bring this capability to the PalmPilot.

Apparently, application development is pretty easy for the PalmPilot, as demonstrated by the oceans of available PD-type software. (There are reportedly over 3,000 developers currently.) I'd expect to start seeing companies selling single-purpose PalmPilot—perhaps utilizing most of the memory for specialized applications like in the medical field.

Buy One Now

3Com did everything right with the PalmPilot. It can quickly become as indispensable as your wristwatch. In fact, it can replace your watch. Sure, it's a lot bulkier, but can your watch do email?

So if you've been waiting for the perfect PDA, it's here, and it's reasonably priced. Happy piloting everyone!

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RESOURCES:

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Professional Edition, \$369

1-800-681-7256

URL: <http://www.3com.com/palm>

Practically speaking for an e-commerce venture, if you've been part of a previous success at a reasonably high level, then, with a thoughtful business plan, you might see a \$500K-\$3 million valuation. If you have little-to-no senior experience, valuations can be \$50K-\$500K. If you have a team together and some significant time into a proprietary product or process that people are getting excited about, you could see a valuation move up to the \$3-\$6 million range. And if you're actually selling the product, getting great reviews, and generally seeing all the important measures of a business move up the hockey stick, a business can be valued anywhere from \$6 million to \$14 million.

Of course, your business could be worth a whole lot less. Or more. It really depends on whether you can find anyone to buy into your story.

The Business Plan

The hardest part about doing a business plan is that no one will read it. Check that... people will *maybe* read the one-page executive summary (any longer and you've lost your audience) and the summary financial projections.

However, as everyone will tell you, the process of doing a business plan, including detailed financial projections, is important because it helps you organize your thoughts. If you can't do a business plan and financial projections, can you really build a business?

Still, don't waste valuable time: Keep the business plan short and to the point.

Doing a business plan does one other great thing: It helps you create a well-thought-through outline presentation of your business, something that hits on the "who, what, why, how, and how big" of your business. Don't exhaust yourself with the business plan and do a half-assed job on the presentation. The presentation is your most important tool in raising money. Nail it and the process just got an order of magnitude easier. Blow it and you'll find yourself back on the Angel circuit.

(One last tip: Never say, "So if the market size is \$100 billion and we get just 0.5% of this market..." Even though venture people will do this calculation themselves, they hate it when an entrepreneur uses this back-of-the-envelope thinking.)

To Be Continued... Yet Again

Since the venture process is so critical to any start-up, we've taken the long approach in this series. We'll wrap up in the next article, though by discussing the dangers of getting too high of a valuation, positioning yourself with venture "alternatives," and contemplating how venture will change your life forever.

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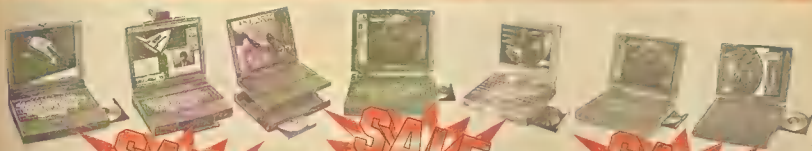
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ThinkPad 3550T	P1550	32	2.1GB	15.1" TFT	14 X	\$1799.00

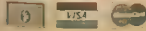
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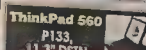
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Business Solutions

32-Bit Computing Continued from page 114

wait-state for faster buses. In fact, ■ may even balk ■ a 75MHz bus altogether, ■ may adapters at the ensuing higher PCI bus speeds (also tied to the bus speed). Consequently, even if the board allows it, the performance gains may not be sufficient to justify the risk of operating at officially unsupported rates. ■

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Session I Starting Monday, March 2, 9:00 am-4:00 pm

Session II Starting Sunday, March 3, 9:00 am-4:00 pm

Magic Developer Certificate

Starting Tuesday, March 3, 6:30 pm-9:30 pm

Client/Server Technologist Professional Certification

Starting Tuesday, March 3, 6:30 pm-9:30 pm

Professional C++/Windows Programmer Certificate

Starting Wednesday, March 4, 6:30 pm-9:30 pm

Powerbuilder Application Specialist Certificate

Starting Saturday, March 7, 9:00 am-4:00 pm

Professional Oracle DBA Certificate and**Professional Oracle Application Developer Certificate**

Starting Saturday, March 7, 9:00 am-4:00 pm

Microsoft Certified Systems Engineer (MCSE) Training Program

Certificate Starting Saturday, March 7, 9:00 am-4:00 pm

Office Application Support Specialist Certificate and**PC Help Desk Support Specialist Certificate**

Starting Sunday, March 8, 9:00 am-4:00 pm

Windows NT Specialist Certificate

Session I Starting Monday, March 23, 8:30 am-5:00 pm

Session II Starting Wednesday, March 25, 6:00 pm-9:45 pm

Visual Basic Application Specialist Certificate

Starting Monday, March 23, 6:30 pm-9:30 pm

Unix System and Network Certificate Program

Starting Monday, March 23, 8:00 am-5:00 pm

Oracle Financials Specialist Certificate

Starting Saturday, March 21, 8:00 am-5:00 pm

March Short Courses**Hands-on PL/SQL**

Mon & Tues, March 2 & 3, 9 am-4 pm

Saturdays, March 26-April 4, 8 am-4 pm

Introduction to SCO Unix Systems

Mon & Tues, March 2 & 3, 9 am-4 pm

Sundays, March 26-April 4, 8 am-4 pm

Rapid Application Development Using Magic

Tuesdays, March 3-31, 6:30-9:30 pm

Introduction to Client/Server Technology

Tuesdays, March 3-31, 6:30-9:30 pm

Digital Publishing Using QuarkXPress

Tues & Thurs, March 2-12, 6:30-9:30 pm

SQL and Oracle Tuning

Wed & Thurs, March 4 & 5, 9 am-4 pm

Introduction to C Programming

Wed, March 4-April 5, 6:30-9:30 pm

SCO Open Server Administration I

Wed & Thurs, March 4 & 5, 9 am-4 pm

Comprehensive Intro. to Oracle RDBMS

Saturdays, March 7-21, 9 am-4 pm

PowerBuilder Application Development I

Saturdays, March 7-28, 9 am-4 pm

Implementing Microsoft TCP/IP

Wed-Fri, March 18-20, 9 am-4 pm

Implementing (Internet Info Serv)

Mon-Wed, March 23-25, 9 am-4 pm

Visual Basic Application Development:**Fundamentals**

Mondays, March 23-May 4, 6:30-9:30 pm

Delphi Application Development:**Intermediate/Advanced**

Wed, March 25-April 29, 6:30-9:30 pm

Security Issues: Reliability, Disaster**Planning, etc.**

Thurs, March 26-April 23, 6:30-9:30 pm

Introduction to Data Warehousing

Saturdays, March 28-April 25, 9 am-1 pm

WWW Publishing on the Internet

Tues & Thurs, March 31-April 9, 6:30-9:30 pm

**GREAT VALUES & MicroTimes
HARD-TO-FIND SERVICES Classifieds**

Online Guide

Web Page Listings continued from page 102

Carolina Corner <http://www.carolinacorner.com>
Features businesses, recreation, and tourism in ten counties of Northwestern North Carolina. [Exp. #175]

Celebrate History! <http://www.celebratehistory.com>
A new, unique event for everyone who loves history—February 13-15 1999, South San Francisco, CA. [Exp. #176]

Cheal Steel For Travelers <http://www.chealsteel.com/cheal/travel> A wallet-sized currency conversion table. [Exp. #176]

CineSecrets <http://www.CineSecrets.com> Movie info site. The source of unofficial Star Wars info. Information plus the making of Highlander, Superman, Lethal Weapon, and many others. [Exp. #176]

Comedy-O-Rama <http://www.comedyorama.com> A great site filled with original, free comedy, television, comic strips, links, and more. [Exp. #176]

Da-Zone Download Station <http://www.da-zone.com> [Exp. #175]

Dark Skies <http://www.planetnz.com> Dark Skies the official Web site of the Save Dark Skies Campaign. [Exp. #175]

David Patrick Ryan's Rhineland—The Music Of Enya http://www.broadnet.com/ryan_davidny01.htm Whenever beauty is to be found in this world, you can picture it Enya vividly when listening. Enya's musical phrases. [Exp. #176]

Detroit's Woodward Dream Cruise Juice Box <http://www.woodwarddreamcruise.com> Featuring a slide show and streaming music. [Exp. #176]

DIXIE's Tapes A Us <http://www.dixies.com> DixieStripStudio/4513 is a great selection of Dixie's system tapes and more for sale/trade. Also, check the sounds, links, and more. [Exp. #176]

Dolphin Yacht Charters <http://www.dolphinyacht.com> Cruise the islands or our sailboat yachts for your vacations in St. Vincent, Grenadines, Barbados, and other Caribbean islands. [Exp. #176]

DR's Sports <http://www.signatures.com> The best "in-person" sports and celebrity autographs on the Internet. [Exp. #176]

DVD Source <http://www.dvdsource.com> Discounted DVD movies with an online catalog and searchable database. [Exp. #176]

Earthquake City BBS <http://members.tripod.com/~eqcitybbs/index.htm> Earthquake City BBS, computer. By Candlelight (radio show), Chrome Oxide music collector pages, lots of links. [Exp. #176]

Empire Cigar Company <http://www.empirecigar.com> The finest in premium cigars and cigar-related accessories. [Exp. #176]

Film Production Advertising Television Commercial <http://www.dragonspyre.com.au> Virtual showcase of our skills. [Exp. #176]

Flapper Station <http://www.320.com/~flap01> Take a step back in time, back to the 1920's when there had running boards and gangsters. [Exp. #176]

Fort Payne Alabama City Line <http://www.fortpayne.com> Great pics! overview of this scenic community. [Exp. #176]

Gold Club Casino <http://www.goldclubcasino.com> The ultimate online gambling experience. [Exp. #176]

HOF Memorabilia <http://www.holmemorabilia.com> Specializing in authentic autographed sports memorabilia. [Exp. #176]

Hotels And Condos, Reservations Service For The Cayman Islands

<http://www.silvanus.com> Caribbean Dreams—destination management and reservations. [Exp. #176]

J & S Ranch <http://jandranch.org> A premier horse boarding, training, and sales facility. [Exp. #176]

Jason's MUME Home Page <http://home.inreach.com/droydan/roysdan/MUME/MUME> A live, multi-user dungeon fantasy roleplaying game based on J.R.R. Tolkien's Middle-earth. [Exp. #177]

Mobile Entertainment Services <http://pw2.net.com/~liatym/KARAOKEZONE.html> A live, multi-user dungeon fantasy roleplaying game based on J.R.R. Tolkien's Middle-earth. [Exp. #177]

Main Events Online <http://www.mainevents.com> Main Events is one of the largest boxing promotion firms in the world. [Exp. #176]

Mammoth <http://mammoth.net/~mammoth> A vacation and holiday resource for condominium rentals in Mammoth Lakes, CA region. [Exp. #177]

Maul Island Currents <http://www.islandcurrents.com> A least of regularly updated information and culture, dining, titles, and events on the paradise called Maul. [Exp. #176]

Rugby Official <http://www.rugbyofficial.com> Site for the Rugby World Cup. [Exp. #177]

Minimus Cruises <http://www.minimus.com> Minimus Cruises of Brisbane, Australia, has a proud tradition of service to people of Brisbane and to many others. [Exp. #176]

Mintus Cruises <http://www.mintus.com> Mintus Cruises of Brisbane, Australia, has a proud tradition of service to people of Brisbane and to many others. [Exp. #176]

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Monterosso Italian Paradise <http://www.monterosso.com> A vacationing spot for a

terrace. [Exp. #176]

Music Mayhem <http://www.geocities.com/Colosseum/Lego/7605> This site is for alternative and ska music fans! [Exp. #176]

Never Forget Against Lifetime Reminder Service <http://home.cwnet.com/remindme> [Exp. #176]

Nothing But Golf <http://www.NothingButGolf.com> Golf contests, trivia, discussions, jokes, tournaments, schedules, rules, resources, handicaps, Hole-in-One registry, and more. [Exp. #176]

NRR, Inc. <http://www.newrealm.com> Music production at its finest. [Exp. #175]

Online Sports League Information Manager <http://www.sportsleague.com> A faster, easier, more efficient way of managing your sports league. [Exp. #175]

OnVideo <http://www.cyberpod.com/cyberpod/onvideo.htm> Complete video guide to current and forthcoming movies released on tape. [Exp. #175]

Orange County Info <http://www.orangetown.com> This site is updated daily and has Orange County specific info on entertainment, arts, news, etc. [Exp. #176]

Orchid13 <http://www.orchid13.com> Photography, poetry, and much more. [Exp. #176]

P&S Records <http://www.precords.com> Princess and Saint Records, the only full-service record company. [Exp. #176]

Hockey enterprises <http://www.hockeyenterprises.com> Hockey skill development. [Exp. #176]

Perfect Harmony <http://www.madrecords.co.uk> A collection of CD recordings of a variety of musical styles. [Exp. #176]

Perpetual Harmony <http://www.madrecords.co.uk> A collection of CD recordings of a variety of musical styles. [Exp. #176]

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Perpetual Harmony <http://www.madrecords.co.uk> A collection of CD recordings of a variety of musical styles. [Exp. #176]

church service [Exp. #177]

Perry Comedy Pages <http://www.perry.com> Comedy Pages. [Exp. #177]

Round Flair <http://www.roundflair.com> [Exp. #176]

Royal Vacations, Inc. <http://royalvacations.com> [Exp. #175]

Salt City Athletics Online <http://www.saltcityathletics.com> Featuring Ling Wood Chuan Wing Chung Kung Fu, Balaikaw Arts, kickboxing, and boxing. [Exp. #176]

Smartweb in Paris <http://www.smartweb.fr> Guide and virtual visit of Paris, museums, monuments, shopping, and fashion. [Exp. #175]

Smokes Online <http://www.smokesonline.com> Your internet resource for planning a Smoky Mountain vacation. [Exp. #176]

SongHitz.com <http://www.songhitz.com> Full-length hits songs in streaming RealAudio. [Exp. #176]

Sound Techniques Television <http://www.soundtechniques.com> Globalnet.co.uk—British acoustic guitar videos. [Exp. #177]

Space Adventures <http://www.spaceadventures.com> Your travel agency, bringing you the best. [Exp. #176]

Star Wars: Episode 1 <http://www.starwars.com> Episodes 1-4 in May 1999. [Exp. #176]

Star Wars: Episode 1 <http://www.starwars.com> Episodes 1-4 in May 1999. [Exp. #176]

Star Wars: Episode 1 <http://www.starwars.com> Episodes 1-4 in May 1999. [Exp. #176]

Star Wars: Episode 1 <http://www.starwars.com> Episodes 1-4 in May 1999. [Exp. #176]

Star Wars: Episode 1 <http://www.starwars.com> Episodes 1-4 in May 1999. [Exp. #176]

Teams of the World <http://www.islandia.is/otw/> football (soccer) club database that continues to grow. [Exp. #176]

Telery <http://www.telery.com/public/default.htm> A place to chat, play games, and have fun with your friends! Live chat, a casino online games, free email and homepages! [Exp. #176]

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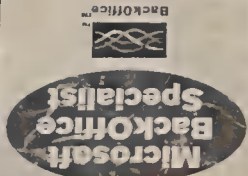
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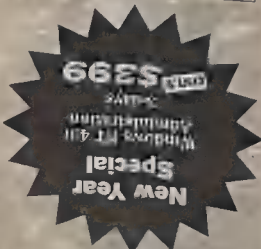
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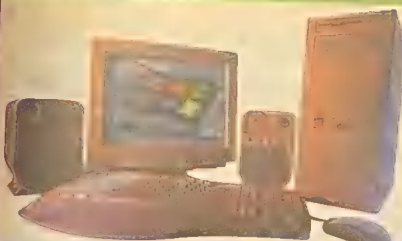
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The Great Foreboding

Or, A Last Look At The Macintosh, I Think

So I went to the Macworld Expo to see who was bailing out. Answer: everyone, kind of. The atmosphere was gloomy to say the least, with die-hards rationalizing their position and keeping the faith. Jobs lived things up with his keynote, and a slew of Maco-philes were bragging about the glories of Office 98 and how the Mac will get it first. Needless to say these folk have not been keeping up. Anyone knows now that the first group to get Office 98 will be sorry! Can you spell "bugs and incompatibility?" Most PC users were saying "better than that us!"

After the show I wandered home to do some file archiving and ran into this column from 1992 which predicted this decline way back then. I've noticed over the years that predicting gloom always pays off because it eventually happens. While being five or six years ahead of the event may be excessive, it does show some insight. The following missive was written five and a half years ago for the now defunct MacUser (reprinted by permission of author, me):

It's time to face the fact: the Mac is at the end of its lifecycle. It's become a dead-end platform just as the Apple II became a dead-end platform in 1984 when the Mac was introduced. The newest same-old Macs to be sold in Sears prove that the end is near.

The basic Macintosh is almost nine years old. If you count the Lisa as part of its evolution then it's nearly a decade old. This is old for an architecture that hasn't changed much except for the addition of a needed bus and some multitasking capability.

Sure the chips are faster, but Motorola has been unable to keep up the torrid pace set by Intel and we'll never see a 68000, that's for sure! So even the CPU is a dead-end as Apple will move to RISC and a new design. The death knell for the Mac will be symbolized by some sort of tribute such as the April 1994 "APPLE II FOREVER" bash Apple threw when it rolled out the Apple IIc right in the face of the Mac juggernaut. When you see a Macintosh Forever party, you'll know the Mac is dead.

The big question is what will Apple call this next generation computer? The Mac III? Q? Will

the Mac moniker be dropped altogether or just left to languish like the Apple II? I suspect it will languish as die-hard Mac owners moan and groan, like old Apple II users used to do.

Whatever happens, now is the time for users to take action and help name the new platform. I'm sure Apple is consulting with naming experts, but these guys do not have the collective brain-power of the Mac user community. I have a few ideas that may trigger some of your own. Send ideas to John Sculley.

Next-Generation Names

Naming conventions fall into five broad categories: vegetable, animal, mineral (remember the VAM hair tonic?), mathematical and conceptual.

The name Apple itself comes from the vegetable category. This category broadly refers to any non-mobile life form, except for SYOPS. The Macintosh, the Pineapple, the Fern. I'd include mushrooms and fungi in this category too. The Pinecone II might be a good name for a computer. Or the Seaweed. How about the Yucca or the Onion Computer? I like the Cactus Computer. Get the point? I suspect Apple may name the next machine after still another breed of apple fruit, such as the Roma, the Gravenstein or the Golden Delicious. How about Winesap or Crabapple?

Onward to the animal category. This was once used by car makers to excess: Falcon, Mustang, Bronco, Cougar, Panther, Stingray. The computer makers haven't done much to exploit these possibilities. There are a lot of potential names in this category. The buffalo, canary, pig, dog, cockroach, blowfish, horsefly. I think the Apple Carp would be a good name. How about hybrid names such as flank steak or corn dog? How about a radical new name such as the Apple Boneless Chicken Computer?

Mineral is the next category. Rock, dust, sand, salt water, cardboard, pyrites, gold, silver, hydrogen. Here the possibilities are endless, especially if we think in terms of macros such as "socket set" or "crock of crap." Now I guarantee that if Apple names its next computer the Apple Crock of Crap it would get all the free publicity it would ever need. Every newspaper and maga-

zine would analyze the idea to death wondering why a great marketing company like Apple would do such a thing. "Looking for a new computer? Buy an Apple Crock of Crap!" Copycats would follow with screwball names for their machines too. Scatological references would be in vogue as we'd see the Compaq Pile O' Dung and the IBM Bat Guano/2.

The mathematical names come next. They are usually just alphanumeric designations such as the new Mac 200 and 400 machines. German car companies seem preoccupied with this as the accepted way to name cars: 750i, 300D, 190E, 325i, 911, 914, 939, etc., etc. Some cars like to use a math formula such as the 2+2 sports car. (Why they just don't call it a "4" mystifies me.) All the chip makers such as Intel and Motorola have been caught up in this concept from the first 4004 microprocessor through the 68040 and the 486DX2. These are probably the ultimate names in nerdland, but let's hope Apple doesn't go in this direction.

Finally there is the high concept. A name like the Oldsmobile falls into this category. Concept names for a computer might be words like sunset, highjump, dreamboat. More complex concepts such as "pie-in-the-face" or "rotten glass of swill" add new dimensions in this category. Apple could, for example, call its computer the Bust a Gut Laughing Computer. What about being disruptive with a name like Gooney-GUI Computer?

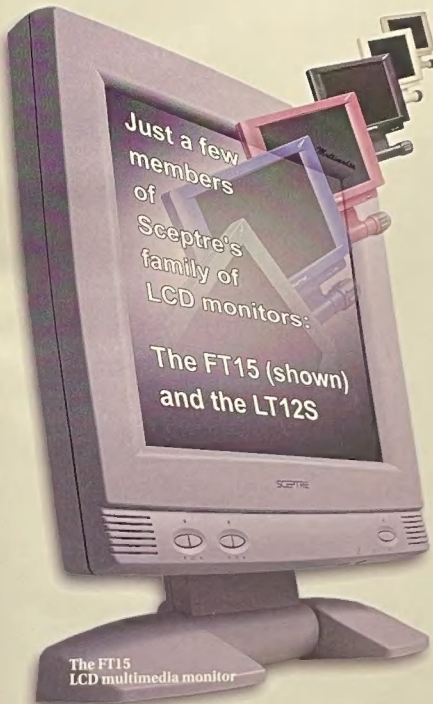
I think a macho name such as the Butt-Kicker would be perfect for a computer. "Falling behind in your work? Spreadsheets taking forever to recalc? Try a Butt-Kicker from Apple!" Very cool name, if you ask me.

Whatever Sculley and company does let's hope it's not going to use the code name like it did with the Macintosh. Then we'd be using the Apple Pink! How about Pinkintosh? I think not. You'd better get those suggestions in FAST!

Needless to say I was a lot funnier six years ago and it's too late for the suggestions. Times change. ■

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